DOCUMENT RESUME

ED 187 843 CE 016 834

TITLE Adult Competency Education Kit. Basic Skills in Speaking, Math, and Reading for Employment. Part P: ACE Competency Based Job Descriptions: #77--Secretary; #78--Keypunch Operator; Assembly Worker Core Job Description; #82--Electronics Assembler; #83--Printed Circuit Assembler; #84--Micro Electronics Assembler; #85--Chassis Assembler; #87--Machinist Apprentice.

INSTITUTION San Mateo County Office of Education, Redwood City, Calif. Career Preparation Centers.

SPONS AGENCY California State Dept. of Education, Sacramento. Bureau of Adult Education.; Office of Education (DHEW), Washington, D.C.

PUB DATE Sep 77

NOTE 112p.; Parts of this document will not reproduce well due to poor print quality. For related documents see CE 016 818-836.

EDRS PRICE MF01/PC05 Plus Postage.

DESCRIPTORS Adult Basic Education; Adult Vocational Education; *Assembly (Manufacturing); Basic Skills; Behavioral Objectives; *Communication Skills; Competency Based Education; Electronics Industry; Employment Potential; Employment Qualifications; Evaluation Criteria; Job Performance; Job Skills; *Machinists; *Mathematics; *Occupational Information; Production Technicians; Reading Skills; *Secretaries; Typists

IDENTIFIERS Adult Competency Education Project; California (San Mateo County); *Electronics Assemblers; *Key Punch Operators

ABSTRACT

This thirteenth of fifteen sets of Adult Competency Education (ACE) Competency Based Job Descriptions in the ACE kit contains job descriptions for Secretary, Keypunch Operator, Electronics Assembler, Printed Circuit Assembler, Micro Electronincs Assembler, Chassis Assembler, and Machinist Apprentice. Each begins with a fact sheet that includes this information: occupational title, D.O.T. code, ACE number, career ladder, D.O.T. general educational developmental level, site(s) at which job can be observed, job requirements, and job description (D.O.T.). The following pages list twenty to forty competencies (specific math and communicative activities) needed to function successfully in the occupation. (An office core job description containing competencies common to the office occupations included here is in CE 016 831. An assembly worker core job description containing competencies common to the assembler occupations is provided.) Each competency is presented as (1) exact skill found to have been essential to the job during an on-site employee interview, (2) measurable instructional objective defining the skill (performance criterion, not job related), and (3) specific task with which to test a student's ability at the skill (the job-related performance criterion). (Instructional objectives match those in the ACE Taxonomy as indicated by a code identifying unit, item, and specific objective.) Skills that are prerequisite to the competencies are noted. (Additional job descriptions, kit manuals, and the project final report are also available in ERIC--see Note.) (YLB)

ED187843

san mateo county office of education

San Mateo County Office of Education
333 Main Street
Redwood City, CA 94063
(415) 364-5600

BEST COPY AVAILABLE

Adult Competency Education kit

a project of the career preparation centers

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

William K. Jennings

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

PART P
ACE COMPETENCY BASED JOB DESCRIPTIONS:
77 - Secretary
78 - Keypunch Operator
Assembly Worker Core Job Description
82 - Electronics Assembler
83 - Printed Circuit Assembler
84 - Micro Electronics Assembler
85 - Chassis Assembler
87 - Machinist Apprentice

BASIC SKILLS IN SPEAKING, MATH, AND READING FOR EMPLOYMENT

OE 0160 834

Products and Processes
Developed by the
Adult Competency Education Project
Director, Joe Cooney

ADULT COMPETENCY EDUCATION KIT TABLE OF CONTENTS

ACE Final Report (CE 016 818)

PART A (CE 016 819)
Introduction to ACE Kit 1
Table of Contents 6
Flowchart of ACE Student Process 7
ACE Counseling Manual 9

PART B (CE 016 820)
ACE Job Analysis and Instruction Manual 99
Interview Form 169

PART C (CE 016 821)
Taxonomy of Instructional Objectives 181
How to Develop Instructional Materials 239
Bibliography 241
Student Competency Profiles 265
Student Assignment Sheets 269
Matrix of Academic Skills 317
ACE Slide/Tape Script 321

PART D (CE 016 822)
ACE COMPETENCY BASED JOB DESCRIPTIONS:
#2 - Child Care Attendant 333
#4 - Guard 349
#8 - Medical Assistant 365

PART E (CE 016 823)
#11 - Groundskeeper 381
#12 - Animal Keeper 405
#15 - Tire Repairperson 411
#16 - Muffler Installer 423
#17 - Garage Mechanic 439

PART F (CE 016 824)
#20 - Body Fender Mechanic 469
#21 - New Car Get-Ready Person 495

PART G (CE 016 825)
#22 - Refrigerator Mechanic 515
#24 - Motorcycle Repairperson 559

PART H (CE 016 826)
#25 - Household Appliance Mechanic 583
#26 - Lineworker 611
#27 - Painter Helper, Spray 633
#28 - Painter, Brush 641
#29 - Carpenter Apprentice 645

PART I (CE 016 827)
#30 - Roofer Apprentice 653
#31 - Pipefitter 669
#32 - Medical Supply Clerk 675
#33 - Stock Clerk 681
#35 - Warehouseman (Laborer, Stores) 711

PART J (CE 016 828)
Sales Core Job Description 723
#36 - Sales, Automotive Parts 737
(see also Sales Core Job Description 723)
#37 - Sales Clerk 757
(see also Sales Core Job Description 723)
#38 - Salesperson, Garden & Housewares 771
(see also Sales Core Job Description 723)
#39 - Salesperson, Women's Garments 785

PART K (CE 016 829)
#40 - Salesperson, Automobile 801
(see also Sales Core Job Description 723)
#41 - Salesperson, Men's Wear 819
(see also Sales Core Job Description 723)
#42 - Waiter/Waitress 833
#45 - Janitor 851
#46 - Porter 859
#48 - Pressing Machine Operator 871

PART L (CE 016 830)
#52 - Maid 879
#54 - Ticket Agent 899
#55 - Cosmetologist 905
#57 - Counterperson 923
#58 - Cook Helper 927
#59 - Kitchen Helper 943

PART M (CE 016 831)
#60 - Food Assembler 955
#61 - Injection Molder - Machine Operator 967
#62 - Data Entry Typist 985
#63 - Institutional Cook 1001
Office Core Job Description 1025
#64 - Clerk Typist 1041
(see also Office Core Job Description)

PART N (CE 016 832)
#65 - Typist I 1049
(see also Office Core Job Descrip. 1025)
#67 - Grocery Checker 1057
#68 - File Clerk 1065
#69 - Receptionist 1087
(see also Office Core Job Descrip. 1025)
#70 - Bank Teller 1091
#71 - Clerk, General Office 1105
(see also Office Core Job Descrip. 1025)

PART O (CE 016 833)
#72 - Ward Clerk 1111
#73 - Account Clerk 1141
#74 - Mail Handler (Messenger) 1167
#75 - Payroll Clerk 1181

PART P (CE 016 834)
#77 - Secretary 1199
(see also Office Core Job Descrip. 1025)
#78 - Keypunch Operator 1203
Assembly Worker Core Job Description 1213
#82 - Electronic Assembler 1223
(see also Assembly Worker Core 1213)
#83 - Printed Circuit Assembler 1237
(see also Assembly Worker Core 1213)
#84 - Micro Electronics Assembler 1247
(see also Assembly Worker Core 1213)
#85 - Chassis Assembler 1255
(see also Assembly Worker Core 1213)
#87 - Machinist Apprentice 1263

PART Q (CE 016 835)
#91 - Meat Cutter 1287

#92 - Shipping Clerk	1303
#93 - Long Haul Truck Driver	1325
#94 - Truck Driver - Light	1351

PART R (CE 016 836)

#95 - Bus Driver	1371
#98 - General Loader	1397
#99 - Forklift Operator	1425
#100 - Material Handler	1439

NOTE

JOB DESCRIPTION NUMBERS. ACE investigated 100 jobs and developed 68 of them into Competency Based Job Descriptions. The above 68 are numbered according to the original listing. The gaps are in the numbering only. This is a complete list of the ACE Competency Based Job Descriptions.

A.C.E. COMPETENCY BASED JOB DESCRIPTION 77

OCCUPATIONAL TITLE: SECRETARY

COMPETENCY BASED JOB DESCRIPTION FACT SHEET

OCCUPATIONAL TITLE: SECRETARY

D.O.T. CODE: 201.368 (4th Ed.: 201.362-030)

ACE NUMBER: 77

CAREER LADDER:

FIRST LEVEL: Secretary

SECOND LEVEL: Office Manager

THIRD LEVEL: Legal Secretary
Administrative Assistant

FOURTH LEVEL: Executive Secretary

D.O.T.'s General Educational Level: 4

SITE WHERE THE JOB CAN BE OBSERVED:

El Portal Del Sol School
69 Tower Road
San Mateo, CA

The activity which is the subject of this report was supported in whole or in part by the U.S. Office of Education, Department of Health, Education, and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the U.S. Office of Education, and no official endorsement by the U.S. Office of Education should be inferred.

Number of Annual Jobs in San Mateo County: 896. This number is based upon the San Francisco-Oakland SMSA, U.S. Census Manpower projections and the quarterly employment security applicant record system reports on local San Mateo County Employment Development Department job opening activity.

Job Prerequisites: Application form, typing test.

D.O.T. JOB DESCRIPTION: Schedules appointments, gives information to callers, takes dictation, and otherwise relieves officials of clerical work and more administrative business detail. Reads and routes incoming mail. Locates and attaches appropriate file to correspondence to be answered by employer. Takes dictation in shorthand or Stenotype machine and transcribes notes on typewriter or from voice recording. Composes and types routine correspondence. Files correspondence and other records. Answers telephone and gives information to callers or routes calls to appropriate official and places outgoing calls. Schedules appointments for employer. Greets visitors, ascertains nature of business and conducts visitors to employer or appropriate person. May take dictation. May arrange travel schedule and reservations. May compile and type statistical reports. May supervise clerical workers. May keep personnel records. May record minutes of staff meetings.

THE ACADEMIC REQUIREMENTS FOR THE JOB OF

SECRETARY

Below are listed, first in general terms and then in specific competencies, the math and communication activities which a person must typically be able to carry out to function successfully as a secretary.

The right hand column lists the exact competencies found to have been essential to the job in our on-site employee interview. This column also notes the skills which are prerequisite to those competencies.

The middle column * states the skill in more general language. The controlled language of this column permits comparison of skills between occupations.

* The items in the middle column have been abstracted from an abbreviated version of the taxonomy of generic skills developed by Kawula, W., and Smith, A De W., Generic Skills Handbook of Occupational Information, Training Research and Development Station, Prince Albert, Saskatchewan, 1975.

1A.4 A secretary must be able to copy numbers on forms such as budget reports, applications, etc.

To accomplish this task, the student must be able to copy whole numbers accurately.

To demonstrate the ability to perform this task, the student will accurately copy a list of ten numbers similar to:

4 2 7 8 3 6

1D.1 A secretary must be able to order supplies for the office.

To accomplish this task, the student must be able to use addition, subtraction, multiplication and division in solving problems involving two or more functions.

To demonstrate the ability to perform this task, the student will solve problems similar to:

If there are 12 dozen pencils in a box and 6 boxes to a case, then there are 72 dozen pencils in a case and one must order 2 cases to get 144 dozen pencils.

3E.2 Prerequisite to 6H.1 — Write a value less than $10,000,000.00 given the word name of the amount.

3F.1 Prerequisite to 6H.1 — Use addition, subtraction, multiplication or division, as appropriate, in the solution of problems involving a combination of two or more functions with decimal fractions.

6G.5 Prerequisite to 6H.1 — Multiply given units to time intervals (e.g., 3 people times 4 hours and 35 minutes).

6G.6 Prerequisite to 6H.1 — Given hours of work and rates of work, calculate hours per week and hours per month.

6H.1 A secretary must be able to figure wages for employees and order materials and supplies.

To accomplish this task, the student must be able to calculate the total cost when given the number of units and the unit cost.

To demonstrate the ability to perform this task the student will do problems similar to:

6 hours worked at $3.50 per hour = $21.00.

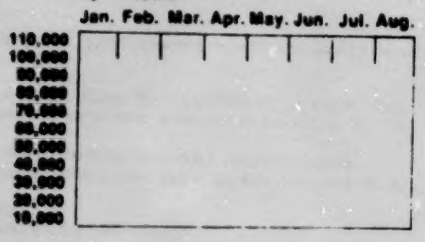
10A.1 Prerequisite to 10B.1 — Read specified data from a simple line, bar or circle graph.

10B.1 A secretary must be able to prepare simple graphs on information such as annual sales and cost increases.

To accomplish this task, the student must be able to prepare a simple graph.

To demonstrate the ability to perform this task, the student will plot the following information on the graph below:

Sales
Jan. - 43,000
Feb. - 50,000
Mar. - 70,000
Apr. - 60,000
May - 45,000



COMPETENCY BASED JOB DESCRIPTION FACT SHEET

OCCUPATIONAL TITLE: KEYPUNCH OPERATOR

D.O.T CODE: 213.582 (4th Ed.: 203.582-030)

A.C.E. NUMBER: 78

CAREER LADDER:

FIRST LEVEL: Keypunch Operator

SECOND LEVEL: Computer Equipment Operator

THIRD LEVEL: Digital Computer Operator

D.O.T.'s GENERAL EDUCATIONAL DEVELOPMENT LEVEL: 3

SITE WHERE THE JOB CAN BE OBSERVED:

San Mateo County
Office of Education
333 Main Street
Redwood City, CA

The activity which is the subject of this report was supported in whole or in part by the U.S. Office of Education, Department of Health, Education, and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the U.S. Office of Education should be inferred.

Number of annual jobs in San Mateo County: 256 This number is based upon the San Francisco-Oakland SMSA, U.S. Census Manpower projections and the quarterly employment security application record system reports on local San Mateo County Employment Development Department job opening activity.

USUAL ENTRANCE REQUIREMENTS: Application form, typing test, interview.

JOB DESCRIPTION (DOT): Operates alphabetic and numeric key-punch machine, similar in operation to electric typewriter, to transcribe data from source material onto punchcards and produce prepunched data. Attaches skip-bar to machine and previously punched program card around machine drum to control duplication and spacing of constant data. Loads machine with decks of punchcards. Moves switches and depresses keys to select automatic or manual duplication and spacing, select alphabetic or numeric punching, and transfer cards through machine stations. Depresses keys to transcribe new data in prescribed sequence from source material into perforations on card. Inserts previously punched card into card gauge to verify registration of punches. Observes machine to detect faulty feeding, positioning, ejecting, duplicating, skipping, punching, or other mechanical malfunctions and notifies supervisor. Removes jammed cards, using prying knife. May tend machines that automatically sort, merge, or match punchcards into specified groups. May keypunch only numeric data and be designated KEYPUNCH OPERATOR, NUMERIC.

THE ACADEMIC REQUIREMENTS FOR THE JOB OF

KEYPUNCH OPERATOR

Below are listed first in general terms and then in specific competencies the math and communication activities which a person must typically be able to carryout to function successfully as a Keypunch Operator.

The right-hand column lists the exact competencies found to have been essential to the job in our on-site employee interview. This column also notes the skills which are prerequisites to those competencies.

The middle column *states the skill in more general language. The controlled language of this column permits comparison of skills between occupations.

*The items in the middle column have been abstracted from an abbreviated version of the taxonomy of generic skills developed by Kawula, W.: and Smith, A. De W.; Generic Skills Handbook of Occupational Information, Training Research and Development Station, Prince Albert, Saskatchewan, 1975.

1A.1 A KEYPUNCH OPERATOR must be able to read numbers and punch them into the machine.

To accomplish this task the student must be able to copy series in hand-written form with 100% accuracy when given a series of numbers in numeral form (e.g. 10, 20, 30).

To demonstrate the ability to perform this task, the student will read and copy 9 8 4 7 3 6 2 9 accurately.

6G.7 A KEYPUNCH OPERATOR must be able to estimate the amount of time it will take to keypunch a particular job.

To accomplish this task the student must be able to estimate the duration of time actually required to perform routine functions, with 50% of the actual time.

To demonstrate the ability to perform this task the student will estimate the time it takes to dress, make coffee, eat breakfast and travel to ACE within 50% of the actual time.

15A.3 A KEYPUNCH OPERATOR must be able to use a vocabulary of occupational terminology.

To accomplish this task, the student must be able to read and use words common to the vocabulary of a given occupation.

To demonstrate the ability to perform this task, the student will match the following with 90% accuracy.

A. punchcards
B. alphabetic
C. numerical
D. transcribe
E. malfunction
F. sequence
G. carbon copy
H. data
I. skip bar
J. automatic
K. merge
L. duplication

1. relating to, denoting, or denoted by a number
2. largely or wholly involuntary
3. to cause to combine, unite or coalesce
4. a bar on a machine which causes the mechanism to omit something
5. of, relating to, or employing an alphabet
6. a data card with holes punched in particular positions, each with its own significant meaning, for use in electrically operated tabulating or accounting equipment or tabulators.
7. the making of copies of typed, drawn or printed matter
8. factual material used as a basis for discussion or decision
9. act of following
10. to fail to operate in the normal or usual manner
11. a duplicate copy made with the use of carbon paper
12. to make a written copy of dictated or recorded matter

Key: A 6, B 5, C 1, D 12, E 10, F 9, G 11, H 8, I 4, J 2, K 3, L 7.

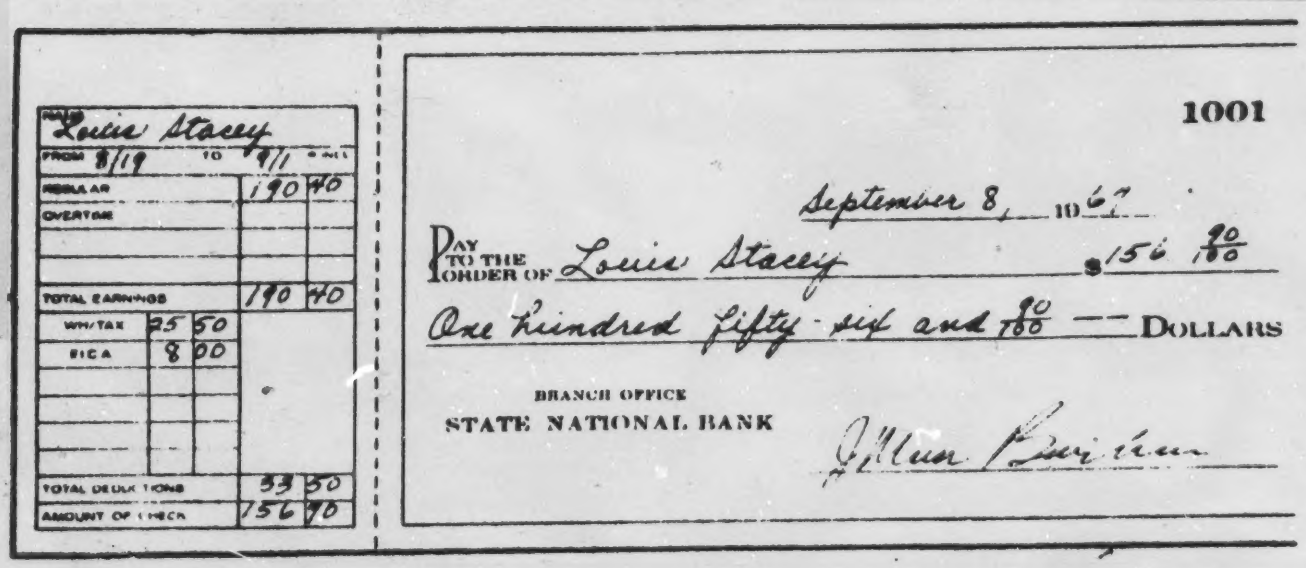
16A.2 Prerequisite to 16A.4 Interpret terminology and abbreviations frequently found in forms.

16A.3 Prerequisite to 16A.4 Identify various kinds of forms by stating the kind of information to be recorded.

16A.4 A KEYPUNCH OPERATOR receives and must be able to read a paycheck.

To accomplish this task, the student must be able to, given a variety of common business forms such as work orders, job orders, issue and receipt vouchers, claims and purchase orders, answer factual questions based on the data on the forms.

To demonstrate the ability to perform this task, the student will refer to the paycheck below and determine that the gross pay is $190.40, the withholding is $25.50, the Social Security tax is $8.00 and net pay is $156.90.



NAME Louis Stacey
FROM 8/19 TO 9/1
REGULAR 190 40
OVERTIME
TOTAL EARNINGS 190 40
WH/TAX 25 50
FICA 8 00
TOTAL DEDUCTIONS 33 50
AMOUNT OF CHECK 156 90

1001

September 8, 19 67

PAY TO THE ORDER OF Louis Stacey $156 90/100

One hundred fifty-six and 90/100 — DOLLARS

BRANCH OFFICE
STATE NATIONAL BANK

J. Allen Peterson

16C.1 A KEYPUNCH OPERATOR must be able to read work orders and memos from the supervisor.

To accomplish this task, the student must be able to, given notes, letters or memos, be able to identify:

a. the author;
b. the recipient;
c. the activities required of the recipient;

and answer factual and interpretative questions from the contents.

To demonstrate the ability to perform this task, the student will read the form below and determine that the work is requested for July 6, at 1:00PM by Jane Dow from the Registrar's department.

DATA PROCESSING
Request & Control

DATA CONTROL NUMBER

TIME RECEIVED BY CONTROL DESK

TIME RETURNED TO CONTROL DESK

SUBMITTED:
Date 6/29/76
Time 10:00 A.M

REQUESTED:
Date 7/6/76
Time 1:00 P M

Job Request: 48 gradesheets

Report Number N/A (If available)

If Special Request:
No. of Copies (Circle) 1 2 (3) 4 5 Other _____

Distribution: _____

Requested By: Jane Doe Dept: Registrar Location: Central Hall

16D.1 Prereguisite to 16D.2 Identify a manual as a handbook of instructions and/or information related to one topic, and give an example of a manual.

16D.2 A KEYPUNCH OPERATOR must be able to use an employee manual.

1 To accomplish this task, the student must be able to identify the particular kind of information or directions included in a given manual, using the title, table of contents and/or index as guide.

To demonstrate the ability to perform this task, the student will determine that maternity leave information is on page 12 by referring to the index below.

PERSONNEL POLICIES & PROCEDURES

INDEX

	PAGE
Credit Union	1
Death In Family	2
Educational Assistance Program and Two Exhibits	3 - 6
Employee and Dependent Medical and Life Insurance	7
Purchases	8
Holidays	9
Jury Duty	10
Leave of Absence (General)	11
Leave of Absence - Maternity	12
Leave of Absence - Medical	13
Leave of Absence - Military	14
Leave of Absence - Personal	15
Moving and Transfer Expenses	16
Overtime	17
Pension Plan	18
Service Awards	19
Sick Pay	20
Vacations	21 - 22
Valuable Idea Program	23

16D.3 Prerequisite to 16D.6 Identify the parts of a given manual which apply to a given situation using the table of contents and/or index as guide.

16D.4 Prerequisite to 16D.6 Given a typical parts manual, be able to locate a particular part and answer factual questions about its description (e.g., price, code number, vendor, etc.).

16D.6 A KEYPUNCH OPERATOR must be able to read the employee manual and answer factual questions about information contained in the manual.

1209

To accomplish this task, the student must be able to, given a typical company manual or union agreement containing administrative policy, personnel and financial rules and regulations, answer factual questions based on the manual for items such as hours of work, rates of pay, vacation or other leave, grievances, promotion and discipline.

To demonstrate the ability to perform this task, the student will read the paragraphs below and determine that a request for maternity leave must be initiated by the employee five months prior to the leave.

LEAVE OF ABSENCE
MATERNITY

Policy Statement
The Company does not normally grant leave of absence for maternity reasons due to the replacement problem and the Company assumption that the employee will desire to remain at home in order to rear the children. However, where the skills of the employee are essential or difficult to replace, the District Manager or Staff Executive may authorize an exception. Even under these circumstances, the request for the leave must be initiated by the employee and a maximum of five (5) months, including pre-natal and post-natal absence,may thereupon be considered.

If leave is requested and granted, the terminal date of active employment prior to delivery will be as determined by the employee or her physician based upon the employee's type of work and physical condition. The date of return to active employment will be no later than 8 weeks after delivery and must have the written approval of employee's physician.

Eligibility Requirements
All regular full-time employees who have one (1) year continuous service with the Company are eligible for maternity leave if approved. Employees classified as part-time or temporary are not eligible.

22B.2 A KEYPUNCH OPERATOR must be able to fill out an application for employment legibly and accurately.

To accomplish this task, the student must be able to complete a sample application form for employment in a legible manner.

To demonstrate the ability to perform this task, the student will completely and accurately fill out 78-A.

25A.1 A KEYPUNCH OPERATOR must be able to discuss instructions with fellow employees, accurately recalling information and directions.

To accomplish this task, the student must be able to repeat information which has been heard.

To demonstrate the ability to perform this task, the student will listen to the instructor read four five digit numbers similar to 97548 and repeat the numbers accurately.

78-A

EMPLOYMENT APPLICATION

1. NAME (Last) (First) (Middle)

2. ADDRESS (Number, Street, City, Zip Code)

3. TELEPHONES
Home _____
Business _____

Length of Time at Current Address | Time at Previous Address

QUESTIONS 4 THROUGH 10 MUST BE ANSWERED *YES* OR *NO*

	YES	NO
4. Do you have a valid California Drivers License?		
5. Do you claim Veteran's Preference? If *Yes*, complete the following and submit copy of DD214 with application. (Veteran's Preference is applicable to entry level positions, only.) SERVICE DATES From _____ To _____ **NOTE:** To receive credit you must have served at least 30 days in the United States Armed Forces in time of war, or national emergency declared by the President of the United States of America, and have been discharged or released under conditions other than dishonorable.		
6. May we contact your present employer as to your qualifications, character and ability?		
7. Have you ever been dismissed from employment or resigned to avoid dismissal for misconduct or unsatisfactory service? (If *Yes*, give details in Question 11)		
8. Have you ever received Workman's Compensation? (If *Yes*, describe in Question 11)		
9. Have you any disease, nervous disorder, physical disability or infirmity? (If *Yes*, describe in Question 11)		
10. Have you been hospitalized for any reason in the past five years? (If *Yes*, describe in Question 11)		

11 Explanations to questions 7 through 10 (Use additional sheets of paper, if necessary.)

12 **EDUCATIONAL RECORD**

Circle Highest Grade Completed 6 7 8 9 10 11 12 | Name and Location of Last Elementary or High School | Graduated? Yes ☐ No ☐

Name and Location of College or University | Major | Credits or Degree

List any related business, trade, special training (give location and dates); estimated typing and shorthand speeds; San Mateo County typing and/or shorthand certificates (give certificate number and date); location of college placement file; and other related information as applicable.

13. **EMPLOYMENT INFORMATION** (Begin with your present employment and work back. Account for all time during the past ten years, including periods of unemployment. In addition, please describe any other related work experience, including volunteer work. Use additional sheets if more space is required.)

Present or Last Position

Employer _____
Address _____
Supervisor's Name & Title _____ Phone _____
Your Title _____
Duties _____

From _____ mo. year
To _____ mo. year
Total _____ years months
Full Time ☐ Part Time ☐
Last Salary _____
Reason for leaving _____

Employer _____
Address _____
Supervisor's Name & Title _____ Phone _____
Your Title _____
Duties _____

From _____ mo. year
To _____ mo. year
Total _____ years months
Full Time ☐ Part Time ☐
Last Salary _____

14. **PERSONAL REFERENCES - GIVE THREE** (Do not include previous employers or relatives.)

NAME	ADDRESS	PHONE NUMBER

82 83 84 85

ASSEMBLY WORKER

CORE JOB DESCRIPTION

The Assembly Worker Core Job Description lists those math and communication skills which are common to the following ACE Competency Based Job Descriptions:

Electronics Assembler.....82
Printed Circuit Assembler...83
MicroElectronics Assembler..84
Chassis Assembler.....85

A complete listing of the skills necessary for these occupations may be found in this core and the job description for the particular job.

A.C.E. COMPETENCY BASED JOB DESCRIPTION
ASSEMBLY WORKER CORE

The activity which is the subject of this report was supported in whole or in part by the U.S. Office of Education, Department of Health, Education, and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the U.S. Office of Education, and no official endorsement by the U.S. Office of Education should be inferred.

1A.1 An ASSEMBLY WORKER must be able to use the correct parts in the assembly work.

To accomplish this task, the student must be able to copy numbers, given a series of numbers in numeral form.

To demonstrate the ability to perform this task, the student will examine exhibit A and write down the seven parts numbers listed in the diagram with 100% accuracy.

1A.2 Prerequisite to 1A.5 Identify place value of digits in a given whole number with up to 7 digits.

1A.3 Prerequisite to 1A.5 Read a given whole number less than 10 milion and write its name in words.

1A.4 Prerequisite to 3A.3 Write a whole number less than 10 million given the word name of the number.

1A.5 An ASSEMBLY WORKER must be able to set up areas of the assembly line with the proper tools and parts.

To accomplish this task, the student must be able to count a set of objects and state or write the numbers of objects counted.

To demonstrate the ability to perform this task, the student will count a number of paper clips placed on the table and relate the total to the instructor both verbally and in writing.

1B.1 An ASSEMBLY WORKER must be able to keep track of parts used and unused.

To accomplish this task, the student must be able to perform simple additions of whole numbers such as $8 + 5$ or $\begin{array}{r} 8 \\ +5 \end{array}$.

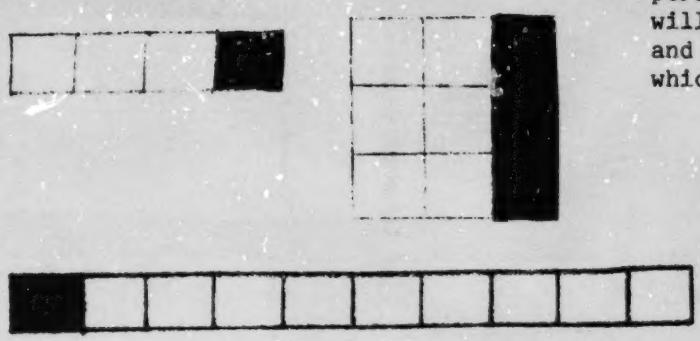
To demonstrate the ability to perform this task, the student will correctly solve the following sums:

a. $\begin{array}{r} 13 \\ +9 \end{array}$ b. $\begin{array}{r} 9 \\ +6 \end{array}$ c. $\begin{array}{r} 21 \\ +11 \end{array}$ d. $\begin{array}{r} 17 \\ +14 \end{array}$

2A.1 An ASSEMBLY WORKER must be able to order wire pre-cut to needed lengths.

To accomplish this task, the student must be able to read fractions and understand their meanings.

To demonstrate the ability to perform this task, the student will examine the diagrams below and correctly write the fractions which are shown:



3A.1 An ASSEMBLY WORKER must be able to read measurement equipment such as ohmmeters, ammeters and oscilloscopes which are calibrated in decimal units.

To accomplish this task, the student must be able to read a given 1-4 place decimal fraction and write its name in words.

To demonstrate the ability to perform this task, the student will read the following decimals aloud to the instructor:

115.2; 2.37; 0.05; .007

3A.2 Prerequisite to 3A.3 Write a 1 - 4 place decimal fraction given the word name of the number.

3A.3 An ASSEMBLY WORKER must be able to work within the very narrow tolerances indicated on schematics or set down by company and Nasa standards.

To accomplish this task, the student must be able to arrange a set of decimal fractions in ascending or descending order.

To demonstrate the ability to perform this task, the student will correctly rank the following decimals in descending order and then read them aloud in ascending order:

0.157; 1.507; .0157; .0751; .705; .7051.

1B.3 Prerequisite to 6G.1 Perform subtrtaction of whole numbers given instructions such as :

8 minus 5 is ____.
Subtract 5 from 8.
Find the difference of 8 and 5.
8 - 5 = ____.

If you had 8 and gave away 5, you would have ____.

$$\begin{array}{r} 8 \\ -\ 5 \\ \hline \end{array}$$

6G.1 An ASSEMBLY WORKER must be able to fill out various time sheets and job records.

To accomplish this task, the student must be able to subtract 10-hour and 12-hour clock times including cases where borrowing is required.

To demonstrate the ability to perform this task, the student will correctly perform the following subtractions:

a. $\begin{array}{r} 5{:}30\ \text{P.M.} \\ -\ 8{:}45\ \text{A.M.} \\ \hline \end{array}$

b. $\begin{array}{r} 9{:}07\ \text{A.M.} \\ -\ 12{:}15\ \text{A.M.} \\ \hline \end{array}$

c. $\begin{array}{r} 11{:}37\ \text{P.M.} \\ -\ 3{:}58\ \text{P.M.} \\ \hline \end{array}$

12E.1 An ASSEMBLY WORKER must be able to requisition the proper parts for a given sub-assembly.

To accomplish this task, the student must be able to trace a particular sub-system on a simple schematic drawing.

To demonstrate the ability to perform this task, the student will examine the schematic drawing (Exhibit A) and trace point A to point B.

13A.1 Prerequisite to 15A.2 Given letters of the alphabet in manuscript form and in random order, read each letter and pronounce each letter correctly.

15A.1 Prerequisite to 15A.2 Read a list of 50 words from a series of commonly used terms (e.g., from the Dolch List).

15A.2 An ASSEMBLY WORKER must be able to locate the correct parts within packaged components.

To accomplish this task, the student must be able to read words from the labels of frequently used products or of products used in a given occupation.

To demonstrate the ability to perform this task, the student will read the following terms aloud to the instructor:

reject	battery contact
microswitch	ceramic
epoxy	negative

15B.1 An ASSEMBLY WORKER must be able to work safely and efficiently on the assembly line.

To accomplish this task, the student must be able to read aloud and explain a series of common functional signs. (e.g., safety signs, road signs, etc.)

To demonstrate the ability to perform this task, the student will orally read the following signs and briefly tell the instructor their meanings:

16A.1 Prerequisite to 16A.4 Identify a form as a standardized printed document with blank spaces for recording certain needed information.

16A.2 Prerequisite to 16A.4 Interpret terminology and abbreviations frequently found in forms.

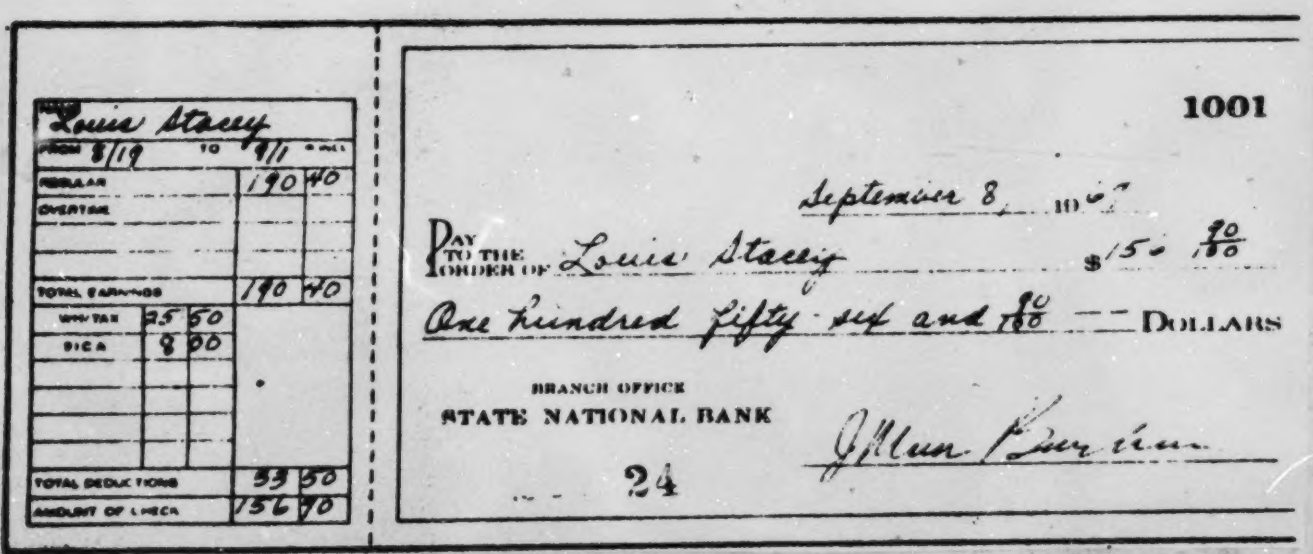
16A.3 Prerequisite to 16A.4 Identify various kinds of forms by stating the kind of information to be recorded.

16A.4 An ASSEMBLY WORKER must be able to verify his own paycheck for correct deductions and net pay.

To accomplish this task, the student must be able to answer factual questions based on the data given on common business forms.

To demonstrate the ability to perform this task, the student will refer to the paycheck below and determine:

a. the gross pay;
b. the federal tax withheld;
c. Social Security Payments;
d. the net pay:



Louis Stacey
FROM 8/19 TO 9/1

REGULAR		190	40
OVERTIME			
TOTAL EARNINGS		190	40
WH TAX	25	50	
FICA	8	00	
TOTAL DEDUCTIONS		33	50
AMOUNT OF CHECK		156	90

1001

September 8, 19--

PAY TO THE ORDER OF Louis Stacey $156.90/100

One hundred fifty-six and 90/100 DOLLARS

BRANCH OFFICE
STATE NATIONAL BANK

J. Allen Peterson

24

16B.1 Prerequisite to 16B.3 Describe the uses of charts and tables and define them as a visual way to give information in a compact and organized form.

16B.2 Prerequisite to 16B.3 State the type of information recorded on given charts or tables.

17A.7 Prerequisite to 19A.15 Do an exercise that requires recall of given instructions or information.

17A.13 Prerequisite to 19A.15 Given a set of written instructions involving activities to be performed by a number of people, and the particular role, prepare a list and sequence of activities to be performed.

19A.15 An ASSEMBLY WORKER must be able to take oral instructions from supervisors while performing assigned tasks.

To accomplish this task, the student must be able to perform a series of two or three activities which require recall of oral instructions. (The activities to be within the abilities of the student - recall is the item to be demonstrated.)

To demonstrate the ability to perform this task, the student will listen to the following directions and then carry them out:

1. cut off a 1" strip from a piece of paper;
2. get some mending tape;
3. take the strip of paper and give it a half twist;
4. tape the edges of the paper together.

21A.3 Prerequisite to 22B.2 Given a date (day, month, date, year) write the date using correct punctuation and capitalization.

21A.4 Prerequisite to 21A.5 Given a standard clock, tell correct time to within 5 minutes.

21A.5 An ASSEMBLY WORKER must be able to fill out time sheets accurately.

To accomplish this task, the student must be able to, given times of the day, be able to write time:

a. 8:00
b. eight o´clock
c. 8 o´clock

To demonstrate the ability to perform this task, the student will examine the clocks below and correctly write the time indicated on each.

22A.1 Prerequisite to 22B.2 Given simple data in the form of words and figures, write phrases on forms which are legible and which convey the desired information.

22B.1 Prerequisite to 22B.2 Given simple data in the form of words and figures, write complete sentences on forms which are legible and which convey the required information.

22B.2 An ASSEMBLY WORKER must be able to get a job.

To accomplish this task, the student must be able to complete a sample application form for employment in a legible manner.

To demonstrate the ability to perform this task, the student will accurately and neatly fill out Exhibit B.

26A.1 An ASSEMBLY WORKER must be able to sort tools, parts and unacceptable parts from those to be shipped.

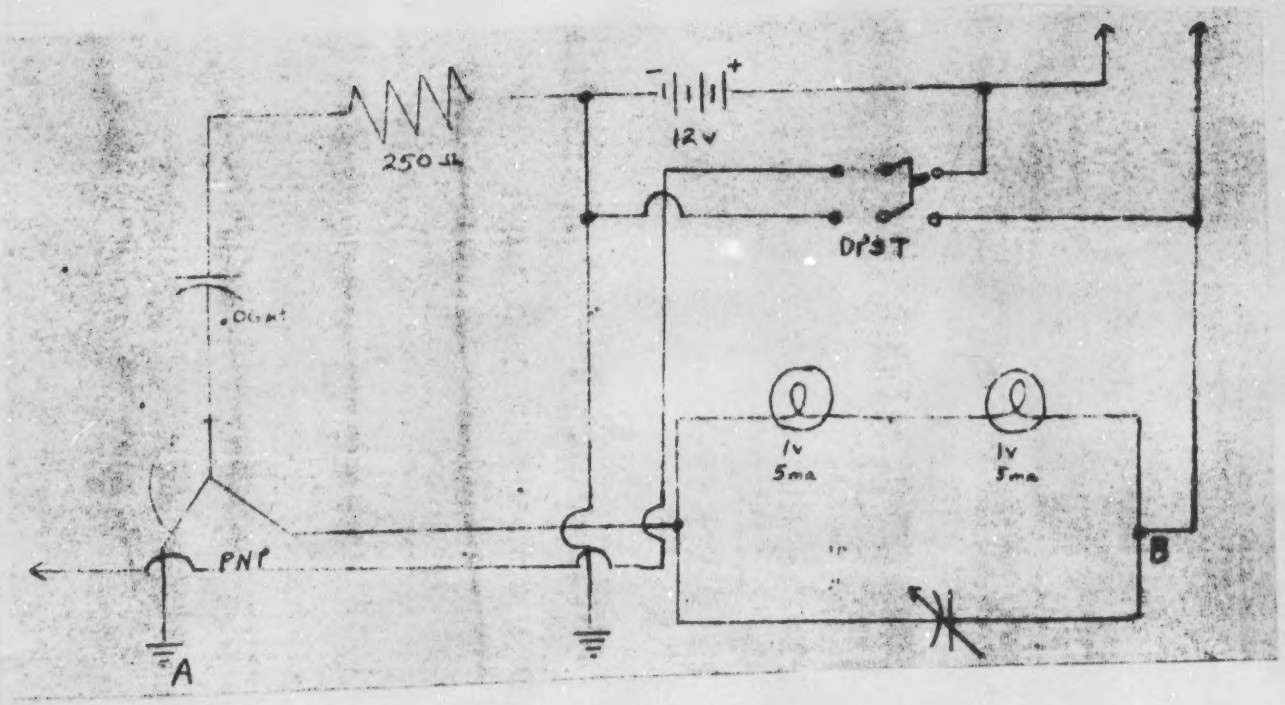
1221

To accomplish this task, the student must be able to, given objects, sort by given classification criteria. The sorting should require a minimum of judgment. To oversimplify, sorting apples by types or tools by various generic classifications would be appropriate but sorting apples by quality or lumber by grades is a rating skill.

To demonstrate the ability to perform this task, the student will sort the pencils in the room into two classifications:

a. those under four inches long;
b. those over four inches in length.

A



1222

B

EMPLOYMENT APPLICATION

1. NAME (Last) (First) (Middle)

2. ADDRESS (Number, Street, City, Zip Code) 3. TELEPHONES
Home
Business

Length of Time at Current Address | Time at Previous Address

QUESTIONS 4 THROUGH 10 MUST BE ANSWERED *YES* OR *NO*

	YES	NO
4. Do you have a valid California Drivers License?		
5. Do you claim Veteran's Preference? If *Yes*, complete the following and submit copy of DD214 with application. (Veteran's Preference is applicable to entry level positions, only.) SERVICE DATES From ____ To ____ **NOTE:** To receive credit you must have served at least 30 days in the United States Armed Forces in time of war, or national emergency declared by the President of the United States of America, and have been discharged or released under conditions other than dishonorable.		
6. May we contact your present employer as to your qualifications, character and ability?		
7. Have you ever been dismissed from employment or resigned to avoid dismissal for misconduct or unsatisfactory service? (If *Yes*, give details in Question 11)		
8. Have you ever received Workman's Compensation? (If *Yes*, describe in Question 11)		
9. Have you any disease, nervous disorder, physical disability or infirmity? (If *Yes*, describe in Question 11)		
10. Have you been hospitalized for any reason in the past five years? (If *Yes*, describe in Question 11)		

11 Explanations to questions 7 through 10 (Use additional sheets of paper, if necessary.)

12 **EDUCATIONAL RECORD**

Circle Highest Grade Completed 6 7 8 9 10 11 12 | Name and Location of Last Elementary or High School | Graduated? Yes ☐ No ☐

Name and Location of College or University | Major | Credits or Degree

List any related business, trade, special training (give location and dates); estimated typing and shorthand speeds; San Mateo County typing and/or shorthand certificates (give certificate number and date); location of college placement file; and other related information as applicable.

13. **EMPLOYMENT INFORMATION** (Begin with your present employment and work back. Account for all time during the past ten years, including periods of unemployment. In addition, please describe any other related work experience, including volunteer work. Use additional sheets if more space is required.)

Present or Last Position

Employer
Address
Supervisor's Name & Title ____ Phone ____
Your Title
Duties

From ____ mo. ____ year
To ____ mo. ____ year
Total ____ years ____ months
Full Time ☐ Part Time ☐
Last Salary
Reason for leaving

Employer
Address
Supervisor's Name & Title ____ Phone ____
Your Title
Duties

From ____ mo. ____ year
To ____ mo. ____ year
Total ____ years ____ months
Full Time ☐ Part Time ☐
Last Salary

14. **PERSONAL REFERENCES - GIVE THREE** (Do not include previous employers or relatives.)

NAME	ADDRESS	PHONE NUMBER

A.C.E. COMPETENCY BASED JOB DESCRIPTION 82

OCCUPATIONAL TITLE: ELECTRONICS ASSEMBLER

COMPETENCY BASED JOB DESCRIPTION FACT SHEET

OCCUPATIONAL TITLE: Electronics Assembler
(Electronics Utility Worker)

DOT CODE: 726.381 (4th Ed.: 726.361-010)

ACE Number: 82

CAREER LADDER

FIRST LEVEL: Electronics Assembler

SECOND LEVEL: Electronics Inspector

THIRD LEVEL: Electronics Supervisor

GENERAL EDUCATION LEVEL: 3

SITE WHERE THE JOB CAN BE OBSERVED

Four-Phase Systems, Inc.
475 El Camino Real
Millbrae, CA

The activity which is the subject of this report was supported in whole or in part by the U.S. Office of Education, Department of Health, Education, and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the U.S. Office of Education, and no official endorsement by the U.S. Office of Education should be inferred.

Number of Annual jobs in San Mateo County 64. This number is based upon the San Francisco-Oakland SMSA, U.S. Census Manpower projections and the quarterly employment security application record system reports on local San Mateo County Employment Development Department job opening activity.

Job Prerequisites: Application form, no tests.

JOB DESCRIPTION (DOT): Arranges layout of work stations on assembly line, following written specifications and oral instructions, to prepare line for production of electronic components, such as printed circuit boards, transformer assemblies, and wiring harnesses and cables; Reads specifications such as bills for materials, wiring diagrams, mechanical prints and schematic diagrams to requisition equipment such as piece parts, tools, test instruments, and jigs and fixtures for work stations. Positions equipment in specified arrangement at work stations. Notifies stock room when stations need resupply of piece parts, such as resistors, transistors, and color-coded wire, during assembly operations. May set and adjust controls for assembly line equipment such as power supplies, timers, and multimeters. May test and repair assembled items by removing or adding turns of transformer wire or resoldering defective connections, using handtools and test equipment such as bridges and oscilloscopes.

THE ACADEMIC REQUIREMENTS FOR THE JOB OF ELECTRONIC ASSEMBLER

Below are listed first in general terms and then in specific competencies the math and communication activities which a person must typically be able to carry out to function successfully as an electronic assembler.

The right hand column lists the exact competencies found to have been essential to the job in our on-site employee interview. This column also notes the skills which are prerequisite to those competencies.

The middle column * states the skill in more general language. The controlled language of this column permits comparison of skills between occupations.

* The items in the middle column have been abstracted from an abbreviated version of the taxonomy of generic skills developed by Kawula, W., and Smith, A. De W., Generic Skills Handbook of Occupational Information, Training Research and Development Station, Prince Albert, Saskatchewan, 1975.

1B.2	Prerequisite to 22H.1	Find the sum of a set of whole numbers of 1-5 digits including cases where carrying is required.
1C.1	Prerequisite to 8A.5	Perform multiplication of whole numbers given instructions such as: 6 times 2 is ___. 6 x 2 = ___. Three two's are ___. 6 The product of 6 and 2 is ___. x2
1C.2	Prerequisite to 8A.5	Find the product of a given pair of whole numbers of which one number is up to 5 digits and the other number up to three digits.
2A.2	Prerequisite to 8A.5	Reduce a fraction to its simplest form (lowest terms).
2A.3	Prerequisite to 8A.5	Change improper fractions to mixed numbers and mixed numbers to improper fractions.
2A.5	Prerequisite to 8A.5	Arrange a set of fractions and/or mixed numbers in ascending or descending order.
3C.1	Prerequisite to 22H.1	Calculate the product of two decimal fractions when rounding off is (a) not required, and (b) required.
3E.1	Prerequisite to 22H.1	Read a given value less than $10,000,000.00 and write its name in words.
3E.2	Prerequisite to 22H.1	Write a value less than $10,000,000.00 given the word name of the amount.
3E.3	Prerequisite to 22H.1	Add columns of dollars and cents values including amounts from $.01 to $9,999.99.
6D.2	The ELECTRONICS ASSEMBLER must be able to mix chemicals to make epoxy glue. To accomplish this task, the student must be able to measure liquid volumes to within one unit of the scale on the measuring instrument.	

To demonstrate the ability to perform this task, the student will measure out ¼ cup of water into a graduated container and have the measurement verified by the instructor.

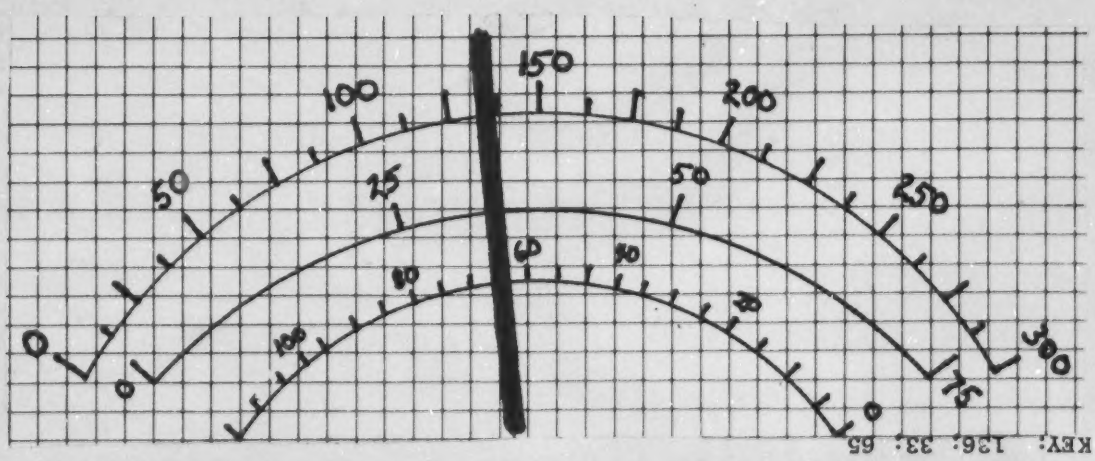
8A.3 Prerequisite to 8A.5 — Identify a series of consecutive whole numbers or multiples of whole numbers with or without equal subdivisions between numbers on a measuring device, such as a graduated scale.

8A.4 Prerequisite to 8A.5 — Write the size of the interval between:
a. numerals on a graduated scale.
b. subdivisions on a graduated scale.

8A.5 The ELECTRONICS ASSEMBLER must be able to read current in microampers.

To accomplish this task, the student must be able to read graduated scales.

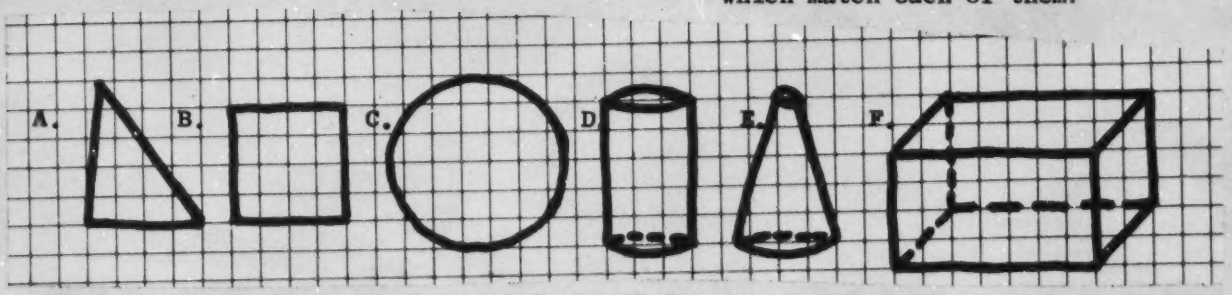
To demonstrate the ability to perform this task, the student will refer to the measuring device below and determine the readings indicated on each scale:



11A.1 The ELECTRONICS ASSEMBLER must be able to match and name batteries and modules of similar size and shape.

To accomplish this task, the student must be able to identify rectangles, squares, triangles, circles, rectangular solids, cubes, pyramids, cones, cylinders, and spheres from a set of objects, pictures of objects, or names of objects.

To demonstrate the ability to perform this task, the student will name the following geometric figures and name common objects which match each of them:



KEY: A. Triangle, B. Square, C. Circle, D. Cylinder, E. Cone, F. Rectangular solid.

12A.3 The ELECTRONICS ASSEMBLER must be able to use a blown-up drawing when learning how to assemble components and connect wires.

To accomplish this task, the student must be able to identify drawings as assembly exploded view or schematics.

To demonstrate the ability to perform this task, the student will examine the 3 exhibits labeled 82A and point out the schematic drawing and the assembly drawing to the instructor.

15A.3 The ELECTRONICS ASSEMBLER must be able to take advice from his supervisor and communicate with his co-workers.

To accomplish this task, the student must be able to read and use in an oral sentence words from a list of words common to the occupational vocabulary.

To demonstrate the ability to perform this task, the student will correctly match the following words with their definitions:

A. eyelet	1. a board on which is a complete or partial path over which current may flow; a hookup that is connected into this path
B. semi-conductor	2. small pincers for handling little objects
C. magnify	3. to pinch together
D. electronics	4. a small solid-state electronic device used instead of an electron tube
E. circuit board	5. a device, as a wire coil, used to produce resistance in a circuit
F. transistors	6. serving as one of the parts of a whole; element or ingredient
G. tweezers	7. a small hole for receiving a cord, hook, etc.; a metal ring or short tube for lining such a hole
H. soldering	8. a connective device or point on an electric circuit
I. terminal	9. operating, produced, or done by the action of electrons or by devices dependent on such actions
J. resistors	10. a metal alloy used when melted to join or patch metal parts or surfaces
K. crimp	11. to increase the apparent size of, especially by means of a lense
L. component	12. a substance, as silicon, whose conductivity is improved by minute additions of certain substances or by application of heat, light or voltage.

Key: A 7, B 12, C 11, D 9, E 1, F 4, G 2, H 10, I 8, J 5, K 3, L 6.

16B.3 The ELECTRONICS ASSEMBLER must be able to select the proper sized parts for a job.

To accomplish this task, the student must be able to answer factual questions based on the data supplied by common reference tables and charts.

To demonstrate the ability to perform this task, the student will refer to the chart below and determine that 14mm = .5512 inches and that 72mm = 2.8346 inches.

12 = .4724	37 = 1.5630	62 = 1.6535	87 = 2.9441	72 = 2.8346	97 = 3.8252	102 = 4.0157	117 = 4.6063
12.25 = .4823	37.25 = 1.5728	62.25 = 1.6634	87.25 = 2.9539	72.25 = 2.8445	97.25 = 3.8350	102.25 = 4.0256	117.25 = 4.6161
12.50 = .4921	37.50 = 1.5827	62.50 = 1.6732	87.50 = 2.9638	72.50 = 2.8543	97.50 = 3.8449	102.50 = 4.0354	117.50 = 4.6260
12.75 = .5020	37.75 = 1.5925	62.75 = 1.6831	87.75 = 2.9736	72.75 = 2.8642	97.75 = 3.8547	102.75 = 4.0453	117.75 = 4.6358
13 = .5118	38 = 1.6024	63 = 1.6929	88 = 2.9835	73 = 2.8740	98 = 3.8646	103 = 4.0551	118 = 4.6457
13.25 = .5217	38.25 = 1.7122	63.25 = 1.7028	88.25 = 2.9933	73.25 = 2.8839	98.25 = 3.8744	103.25 = 4.0650	118.25 = 4.6555
13.50 = .5315	38.50 = 1.1220	63.50 = 1.7126	88.50 = 3.0031	73.50 = 2.8937	98.50 = 3.8842	103.50 = 4.0748	118.50 = 4.6653
13.75 = .5413	38.75 = 1.1319	63.75 = 1.7224	88.75 = 3.0130	73.75 = 2.9035	98.75 = 3.8941	103.75 = 4.0846	118.75 = 4.6752
14 = .5512	39 = 1.1417	64 = 1.7323	89 = 3.0228	74 = 2.9134	99 = 3.9039	104 = 4.0945	119 = 4.6850
14.25 = .5610	39.25 = 1.1516	64.25 = 1.7421	89.25 = 3.0327	74.25 = 2.9232	99.25 = 3.9138	104.25 = 4.1043	119.25 = 4.6949
14.50 = .5709	39.50 = 1.1614	64.50 = 1.7520	89.50 = 3.0425	74.50 = 2.9331	99.50 = 3.9236	104.50 = 4.1142	119.50 = 4.7047
14.75 = .5807	39.75 = 1.1713	64.75 = 1.7618	89.75 = 3.0524	74.74 = 2.9429	99.75 = 3.9335	104.75 = 4.1240	119.75 = 4.7146

16D.1 Prerequisite to 16D.5 Identify a manual as a handbook of instructions and/or information related to one topic, and give an example of a manual.

16D.2 Prerequisite to 16D.5 Identify the particular kind of information or directions included in a given manual, using the title, table of contents, and/or index as guide.

16D.3 Prerequisite to 16D.5 Identify the parts of a given manual which apply to a given situation using the table of contents and/or index as guide.

16D.4 The ELECTRONICS ASSEMBLER must be able to order parts when they are out of stock.

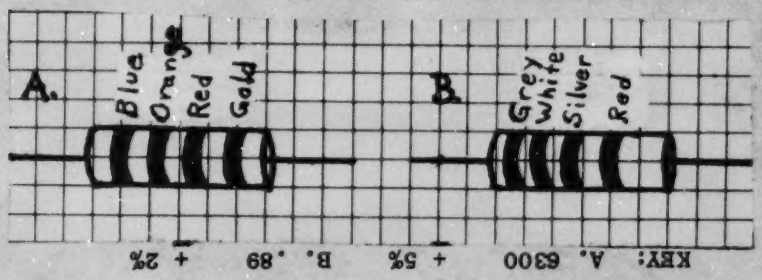
To accomplish this task, the student must be able to locate a particular part and answer factual questions about its description (e.g., price, code number, vendor, etc.) given a typical parts manual.

To demonstrate the ability to perform this task, the student will examine 82B and determine the reference number and description for part number 12 in the illustration. In addition, the student will briefly list the different types of distributors mentioned in the parts book and their different uses.

16D.5 The ELECTRONICS ASSEMBLER must be able to independently solve minor problems which arise during production.

To accomplish this task, the student must be able to apply instructions or information from a given manual to a particular situation given an oral description of a problem that can be solved using information from the manual.

To demonstrate the ability to perform this task, the student will decode the resistors using the information on exhibit 82C:



22D.1 The ELECTRONICS ASSEMBLER must be able to convey the assembly status of products and relate problems to a member of the next shift and supervisor.

To accomplish this task, the student must be able to write clear and concise notes which supply necessary data about who, when, where, what, why and how.

To demonstrate the ability to perform this task, the student will relate the following information in a short note:

At 10:00 last night, Theodore Dreiser was working on the assembly line at point A. The electrical outlet at his station wasn't working properly so he called maintenance. They couldn't fix it, so Theodore went home. Do not have anyone use that station this morning until we can hire an electrician.

22H.1 The ELECTRONICS ASSEMBLER must be able to keep a written record of work completed, parts used, parts rejected and time spent.

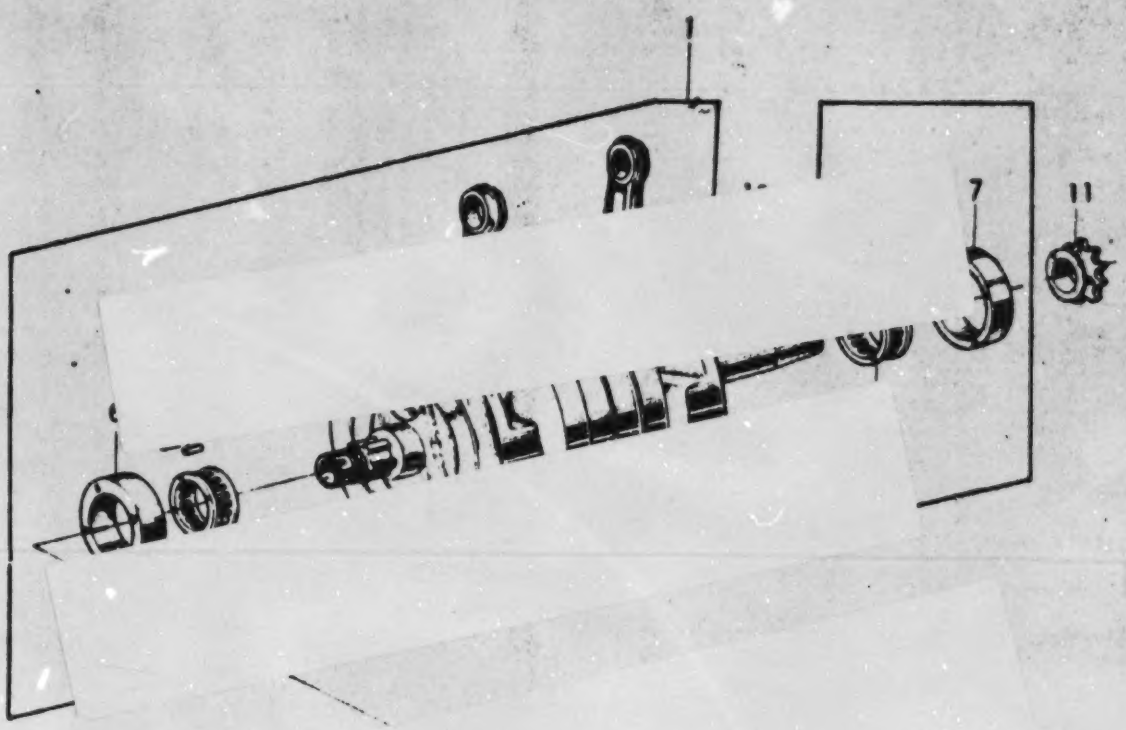
To accomplish this task, the student must be able to fill out typical business forms used for this purpose such as purchase orders.

To demonstrate the ability to perform this task, the student will fill out exhibit 82D with the following data:

P.O. #13765, on November 24, 1976, needed on 12/21/76, 200 parts #15764, 25,000 resistors costing $2.00 per 50 and 6 parts, #6748 oil transformers costing $6.50 each.

82-A (1)

Substitute an assembly drawing



82A

82-A (2)

Substitute a section drawing

82-A (3)

Substitute a section drawing

1234

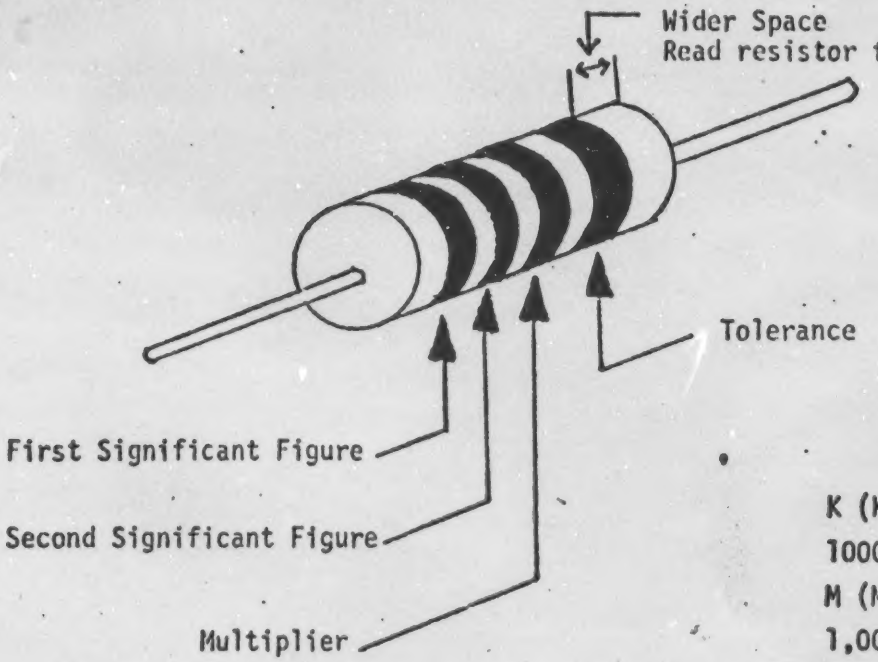
82-B

Substitute a parts chart with

reference numbers, descriptions and prices

82C

THE FOUR BANDER



K (Kilo) = 1000
1000 Ω = 1K Ω
M (Meg) = 1,000,000
1,000,000 Ω = 1M Ω

(No. of Zeros)

Color	Fig.	Multiplier	Tolerance
Black	0	No Zeros	
Brown	1	1 Zero	
Red	2	2 Zeros	± 2%
Orange	3	3 Zeros	
Yellow	4	4 Zeros	
Green	5	5 Zeros	
Blue	6	6 Zeros	
Violet	7	7 Zeros	
Gray	8	8 Zeros	
White	9	9 Zeros	
Silver		10^{-2} .01	± 10%
Gold		10^{-1} .1	± 5%
No Color			± 20%

82C

1236

82D

REQUISITION

No. 103765

Cain Electronics
SUGGESTED VENDOR
113 Eden Avenue
ADDRESS
Bethlehem, Pa.
CITY

SHIP

P.O. NO.	DATE OF P.O.	COMMUNICATED TO	
		J. D. Abel	DPS

A.C.E. COMPETENCY BASED JOB DESCRIPTION 83

OCCUPATIONAL TITLE: PRINTED-CIRCUIT ASSEMBLER

COMPETENCY BASED JOB DESCRIPTION FACT SHEET

OCCUPATIONAL TITLE: PRINTED-CIRCUIT ASSEMBLER (Electronics Assembler)

DOT CODE: 726.884 (4th Ed.: 726.684-018)

ACE Number: 83

CAREER LADDER

FIRST LEVEL: Production I
Process I
Production Lead I

SECOND LEVEL: Production II
Fabrication I
Inspector II
Production Lead II

THIRD LEVEL: Fabrication II
Technician I
Production Lead III

General Education Level: 3

JOB SITE WHERE THE JOB CAN BE OBSERVED

Hewlett/Packard
1501 Page Mill Road
Palo Alto, CA

The activity which is the subject of this report was supported in whole or in part by the U.S. Office of Education, Department of Health, Education, and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the U.S. Office of Education, and no official endorsement by the U.S. Office of Education should be inferred.

Number of Annual Jobs in San Mateo County: 72. This number is based upon the San Francisco-Oakland SMSA, U.S. Census Manpower projections and the quarterly employment security application record system reports on local San Mateo County Employment Development job opening activity.

JOB PREREQUISITES: Application
Interview with three "lead" people.

JOB DESCRIPTION (DOT): Installs electronic components, such as semiconductors and transistors, on printed circuit boards, following instructions and assembly drawings: Inserts lead wires of specified components into eyelets or terminals of circuit board and crimps connections, using pliers and tweezers. Places completed boards on conveyor leading to soldering operations. May use magnifying glass as an assembly aid.

THE ACADEMIC REQUIREMENTS FOR THE JOB OF PRINTED-CIRCUIT ASSEMBLER

Below are listed first in general terms and then in specific competencies the math and communication activities which a person must typically be able to carry out to function successfully as a printed-circuit assembler.

The right hand column lists the exact competencies found to have been essential to the job in our on-site employee interview. This column also notes the skills which are prerequisite to those competencies.

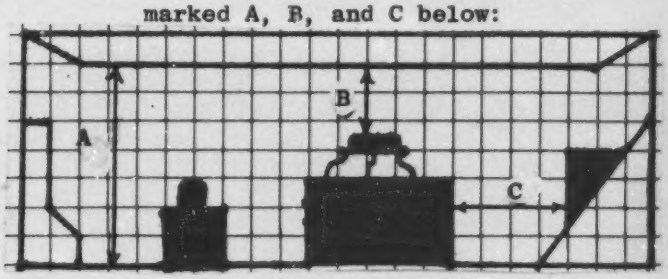
The middle column * states the skill in more general language. The controlled language of this column permits comparison of skills between occupations.

* The items in the middle column have been abstracted from an abbreviated version of the taxonomy of generic skills developed by Kawula, W., and Smith, A. De W., Generic Skills Handbook of Occupational Information, Training Research and Development Station, Prince Albert, Saskatchewan, 1975.

6F.3 The Printed-Circuit Assembler must be able to determine chassis clearances in order to properly assemble units.

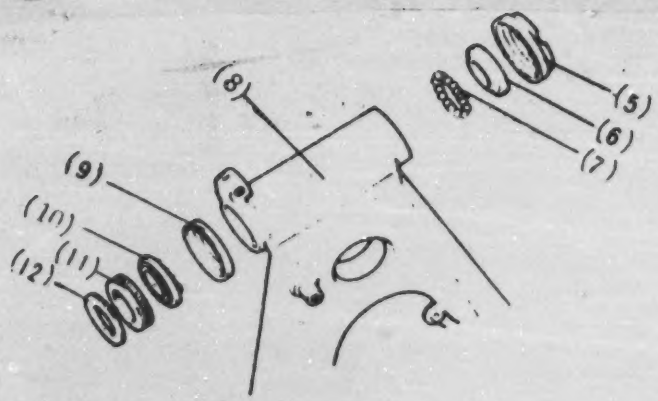
To accomplish this task, the student must be able to estimate the length, width, height, or distance between objects within 20% of the actual measurement.

To demonstrate the ability to perform this task, the student will estimate the distances marked A, B, and C below:



12D.1 The Printed-Circuit Assembler must be able to assemble parts in the correct order.

To accomplish this task, the student must be able to identify the order in which parts are put together in an assembly drawing.



Assembly Drawing

To demonstrate the ability to perform this task, the student will examine the assembly drawing below and explain to the instructor the order in which the parts are assembled.

15A.3 The Printed-Circuit Assembler must be able to relate problems to his supervisor and converse with his fellow workers.

To accomplish this task, the student must be able to read and use in an oral sentence words from a list of words common to the vocabulary of a given occupation.

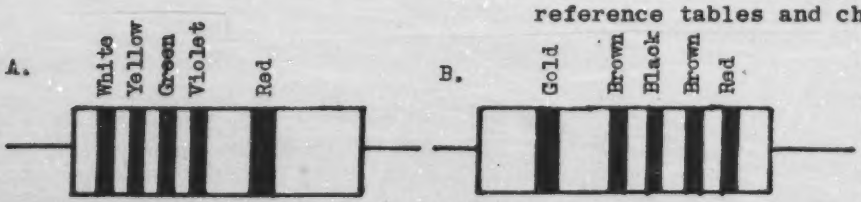
To demonstrate the ability to perform this task, the student will correctly match the following words and their definitions:

A. engraving	1. coating with gold, tin, etc.
B. coaxial cable	2. substance whose electrical conductivity is enhanced by adding minute amounts of certain substances or the application of voltage.
C. plating	3. type of pliers.
D. tolerance	4. amount of variation allowed from the standard.
E. rivet	5. electronic circuit containing interconnected. amplifying devices formed of a single body or chip of semiconductor material.
F. semiconductor	6. electrical circuit formed by applying conductive material in fine lines or other shapes to an insulated surface.
G. printed circuit	7. cutting or etching onto a printed circuit board.
H. microscope	8. metal bolt with a head on one side used to fasten two items together.
I. integrated circuit	9. framework to which parts and integrated circuits are attached.
J. solder	10. a device having an outer conducting tube surrounding an insulated, solid or stranded central conductor.
K. chassis	11. instrument for magnifying small objects through a series of lenses.
L. diagonals	12. integral part of the whole assembly.
M. component	13. metal alloy used when melted to join metal parts or surfaces.

KEY: A-7, B-10, C-1, D-4, E-8, F-2, G-6, H-11, I-5, J-13, K-9, L-3, M-12

16B.3 The Printed-Circuit Assembler must be able to use the correct parts in assembling various components.

To accomplish this task, the student must be able to answer factual questions based on the data supplied by common reference tables and charts.



KEY: A. 9,450,000,000Ω± 2%; B. 2,100Ω± 5%

To demonstrate the ability to perform this task, the student will compare the following color-coded resistors with exhibit 83A and determine the values indicated:

16D.1 Prerequisite to 16D.5 Identify a manual as a handbook of instructions and/or information related to one topic, and give an example of a manual.

16D.2 Prerequisite to 16D.5 Identify the particular kind of information or directions included in a given manual, using the title, table of contents, and/or index as guide.

16D.3 Prerequisite to 16D.5 Identify the parts of a given manual which apply to a given situation using the table of contents and/or index as guide.

16D.4 The Printed-Circuit Assembler must be able to replenish the stocks of parts used.

To accomplish this task, the student must be able to locate a particular part and answer factual questions about its description (e.g., price, code number, vendor, etc.), given a typical parts manual.

To demonstrate the ability to perform this task, the student will examine exhibit 83B and determine the following information:

1.) The part number and name of the illustration labeled 10.
2.) The part number and price of the Teflon bracket.
3.) The number representing the picture of the actuator motor coil.

16D.5 The Printed-Circuit Assembler must be able to deal with minor problems arising on the job.

To accomplish this task, the student must be able to apply instructions or information from a given manual to a particular situation given an oral description of a problem that can be solved using information from the manual.

To demonstrate the ability to perform this task, the student will read the passage below and answer the following questions:

1. What three factors affect the resistance of a wire?
2. If the length of a wire is doubled, how is the resistance affected?
3. What effect does doubling the cross-sectional area of a wire have on resistance?

The resistance of a uniform, circular copper wire is dependent upon the length of the wire,
tl
tu
d
is
w
w

Substitute page from manual

l not used

[

[

e re-
s. As
e in-
wire
At a
temperature of 170°F, the resistance would be about .05 ohm, or an increase of 25 per cent.

If the cross-sectional area of a wire is doubled, the resistance for any given length will be cut in half. That is, the bigger the wire in cross-sectional area, the less will be the resistance.

KEY: 1. length, cross-sectional area and temperature. 2. doubled. 3. halved.

17A.1 Prerequisite to 17A.3 Select appropriate titles for paragraphs, given a list of titles.

17A.3 The Printed-Circuit Assembler must be able to learn job-related material given in manuals or instructional packets.

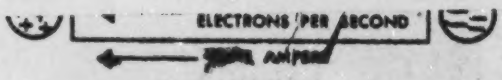
To accomplish this task, the student must be able to identify orally the main idea in a given paragraph.

To demonstrate the ability to perform this task, the student will read the paragraph below and tell the instructor the main idea:

The flow of electrons through a conductor is called current, and is measured in amperes

Substitute paragraph from a manual

is the flow of water in a pipe measured in gallons per minute.



19A.4 Prerequisite to 22E.4 Identify the main idea from a given speech which has just one main idea.

19A.11 Prerequisite to 22E.4 List facts from an oral statement which support the main idea.

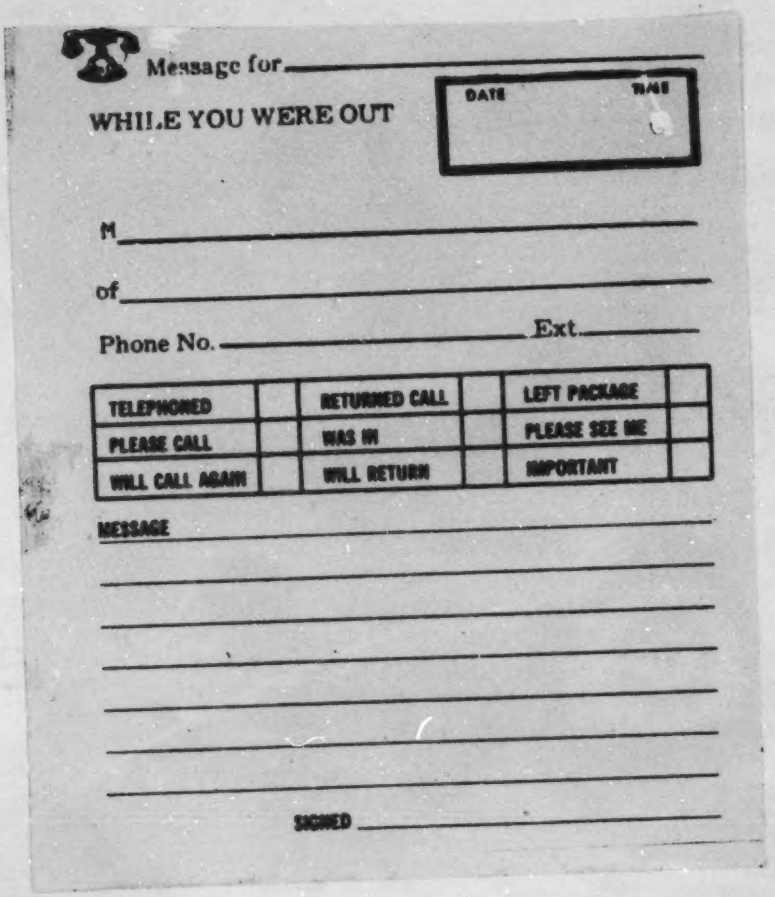
22E.1 Prerequisite to 22E.4 Write down the exact words of a short message given orally.

22E.4 The Printed-Circuit Assembler must be able to take phone messages on the assembly line.

To accomplish this task, the student must be able to record oral information given by filling out an order form or other standard information sheet.

To demonstrate the ability to perform this task, the student will correctly fill out the form below with the information provided (to be read orally by the instructor)

Is John Brown in? This is Steve Benet, calling from Harper's. Please ask him to call me before 4:00 this afternoon about the new volt-ohmmeters. Thank you.



Message for _____

WHILE YOU WERE OUT

DATE TIME

M _____

of _____

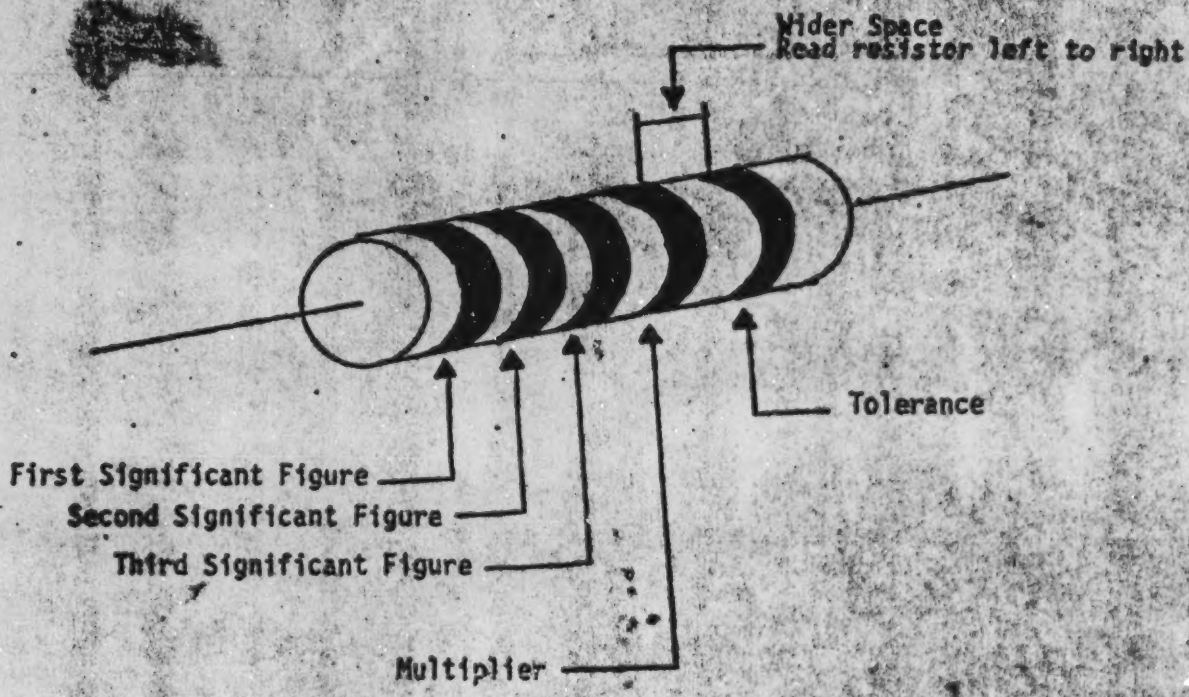
Phone No. _____ Ext. _____

TELEPHONED		RETURNED CALL		LEFT PACKAGE	
PLEASE CALL		WAS IN		PLEASE SEE ME	
WILL CALL AGAIN		WILL RETURN		IMPORTANT	

MESSAGE _____

SIGNED _____

83-A THE FIVE BANDER 1245



Color	Fig.	Multiplier	± Tolerance %
Black	0	0 Zeros	
Brown	1	1 Zero	± 1%
Red	2	2 Zeros	± 2%
Orange	3	3 Zeros	
Yellow	4	4 Zeros	
Green	5	5 Zeros	± .5%
Blue	6	6 Zeros	± .25%
Violet	7	7 Zeros	± .1%
Gray	8	8 Zeros	± .05%
White	9	9 Zeros	
Silver		10^{-2} .01	± 10%
Gold		10^{-1} .1	± 5%

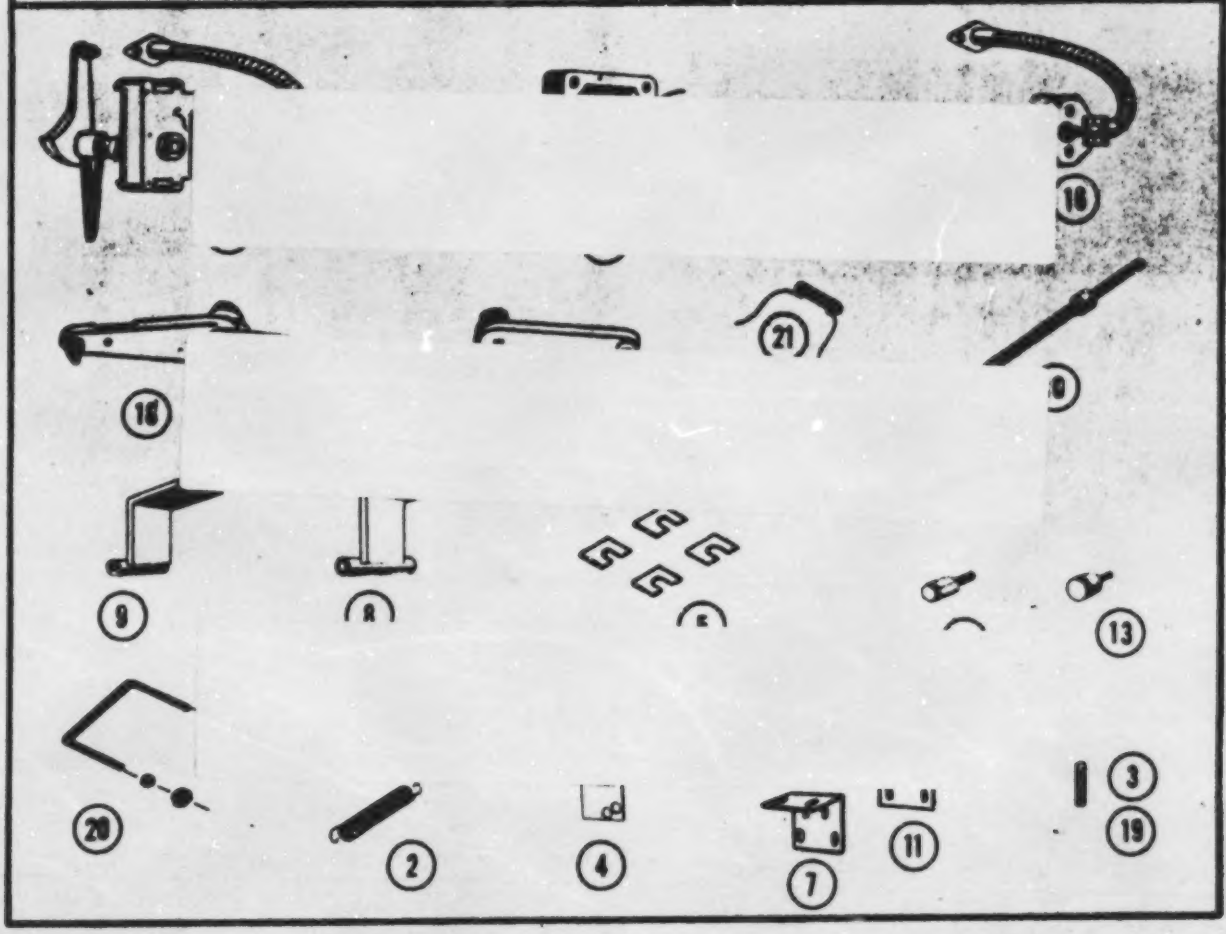
83-B

1246

ACTUATOR COMPONENTS

Substitute a parts chart with graphics.

			LIST PRICE
1	G		1.40
2	G		3.00
3	G		
		Motor)	.40
4	GB-235	Bracket, Teflon	3.80
5	GB-580	Bearing Bracket Shim Kit (2 Thick – 2 Thin)	2.20
6	GB-826	Capacitor 1.2 MFD for GB-955 (Square) Actuator Motor	2.00
7	GB-910	Bracket, Actuator Motor (GB Only) (See Also GY)	1.40
8	GB-933		1.20
9	GB-937		
10	GB-942		
11	GB-946R		
12	GB-949		
13	GB-951		
14	GB-954	Square Actuator Motor and Front Cam Assembly, Less Capacitor	
		Exchange Price	24.00
			13.60
			5.80
			3.80
			4.00
			.60
			.80
21	GB-1459FF	Resistor For Actuator Motor (230 Volt – 50 Cycle Only)	2.40



COMPETENCY BASED JOB DESCRIPTION FACT SHEET

OCCUPATIONAL TITLE: Micro-Electronics Assembler (Electronics Assembler)

DOT CODE: 726.884 (4th Ed.: 726.684-018)

A.C.E. Number: 84

CAREER LADDER:

FIRST LEVEL: Production 1 (in micro-electronics)

SECOND LEVEL: Production 11 (in micro-electronics)

THIRD LEVEL: Production "lead"

General Education Level: 4

JOB SITE WHERE THE JOB CAN BE OBSERVED:

Hewlett Packard
1501 Page Mill Road
Palo Alto, CA

These materials were developed pursuant to a grant from HEW.OE under PL93-380, Section 309. This does not necessarily imply endorsement of the content.

The activity which is the subject of this report was supported in whole or in part by the U.S. Office of Education, Department of Health, Education, and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the U.S. Office of Education, and no official endorsement by the U.S. Office of Education should be inferred.

Number of Annual Jobs in San Mateo County 72. This number is based upon the San Francisco-Oakland SMSA, U.S. Census Manpower projections and the quarterly employment security application record system reports on local San Mateo County Employment Development Department job opening activity.

Job Prerequisites: Previous Experience and/or Training, Application Form, Interview (no testing). At times "in house" training is available for the non-experienced - four nights weekly for two weeks, free of charge.

JOB DESCRIPTION (DOT): Assembles semiconductor devices, such as diodes, rectifiers, and transistors by performing any combination of the following tasks, using tweezers, magnifying lenses and binocular microscopes: Inserts parts, such as wafers, lead pins, and crystals into slots or holes in jigs preparatory to plating and etching.

THE ACADEMIC REQUIREMENTS FOR THE JOB OF MICRO-ELECTRONICS ASSEMBLER

Below are listed first in general terms and then in specific competencies the math and communication activities which a person must typically be able to carry out to function successfully as a micro-electronics assembler.

The right-hand column lists the exact competencies found to have been essential to the job in our on-site employee interview. This column also notes the skills which are prerequisite to those competencies.

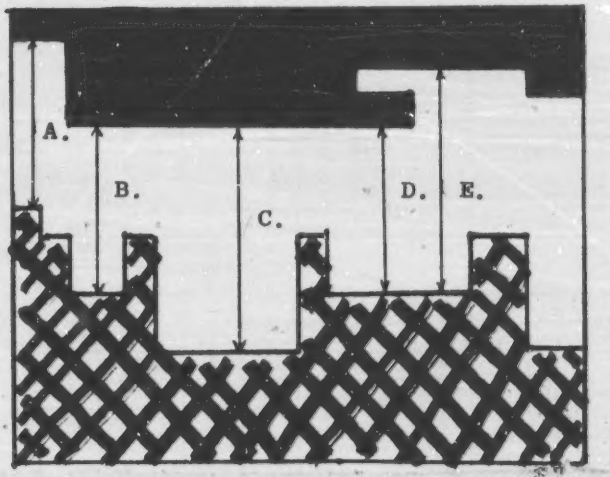
The middle column * states the skill in more general language. The controlled language of this column permits comparison of skills between occupations.

* The items in the middle column have been abstracted from an abbreviated version of the taxonomy of generic skills developed by Kawula, W., and Smith, A. De W., Generic Skills Handbook of Occupational Information, Training Research and Development Station, Prince Albert, Saskatchewan, 1975.

6A.7 The Micro-Electronics Assembler must be able to place parts inside of a chassis.

To accomplish this task, the student must be able to estimate the area of common rectangular or square objects within 25% of the actual area.

To demonstrate the ability to perform this task, the student will estimate the dimensions labeled below:



KEY: A. 1"; B. 1"; C. 1¼"; D. 1"; E. 1¼"

9B.2 The Micro-Electronics Assembler must be able to use metric parts because of the conversion of government contracts from using English measure to metrics.

To accomplish this task, the student must be able to, given tables, convert English distance measurements to metric measurements.

Inches	0.000	0.001	0.002	0.003	0.004
	Millimeters				
0.500	12.7000	12.7254	12.7508	12.7762	12.8016
0.510	12.9540	12.9794	13.0048	13.0302	13.0556
0.520	13.2080	13.2334	13.2588	13.2842	13.3096
0.530	13.4620	13.4874	13.5128	13.5382	13.5636
0.540	13.7160	13.7414	13.7668	13.7922	13.8176
0.550	13.9700	13.9954	14.0208	14.0462	14.0716
0.560	14.2240	14.2494	14.2748	14.3002	14.3256
0.570	14.4780	14.5034	14.5288	14.5542	14.5796
0.580	14.7320	14.7574	14.7828	14.8082	14.8336
0.590	14.9860	15.0114	15.0368	15.0622	15.0876
0.600	15.2400	15.2654	15.2908	15.3162	15.3416
0.610	15.4940	15.5194	15.5448	15.5702	15.5956
0.620	15.7480	15.7734	15.7988	15.8242	15.8496
0.630	16.0020	16.0274	16.0528	16.0782	16.1036
0.640	16.2560	16.2814	16.3068	16.3322	16.3576
0.650	16.5100	16.5354	16.5608	16.5862	16.6116
0.660	16.7640	16.7894	16.8148	16.8402	16.8656
0.670	17.0180	17.0434	17.0688	17.0942	17.1196
0.680	17.2720	17.2974	17.3228	17.3482	17.3736
0.690	17.5260	17.5514	17.5768	17.6022	17.6276

To demonstrate the ability to perform this task, the student will convert the following inch measurements to millimeters, using the chart below:

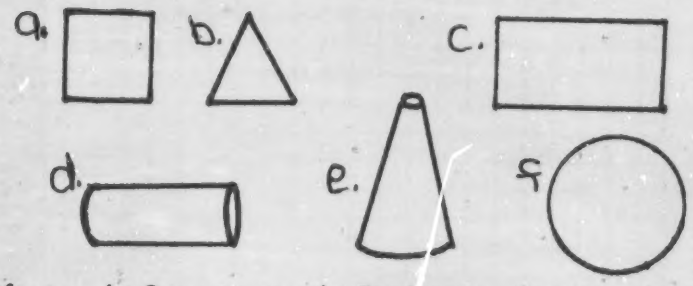
1. .6 inches;
2. .572 inches;
3. .690 inches.

KEY: 1. 15.2400mm.
2. 14.5288mm.
3. 17.5260mm.

11A.1 The Micro-Electronics Assembler must be able to read and utilize schematics and/or assembly drawings.

To accomplish this task, the student must be able to identify rectangles, squares, triangles, circles, rectangular solids, cubes, pyramids, cones, cylinders, and spheres from a set of objects, pictures of objects, or names of objects.

To demonstrate the ability to perform this task, the student will name the shapes below and indicate to the instructor a corresponding object in the room for each:

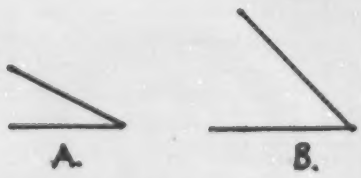


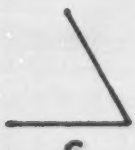
KEY: a. square, b. triangle, c. rectangle, d. cylinder, e. cone, f. circle

11B.1 The Micro-Electronics Assembler must be able to assemble parts based on drawings.

To accomplish this task, the student must be able to identify 30°, 45°, 60°, and 90° angles from a set of such angles, without the aid of a protractor.

To demonstrate the ability to perform this task, the student will correctly name the angles depicted below:



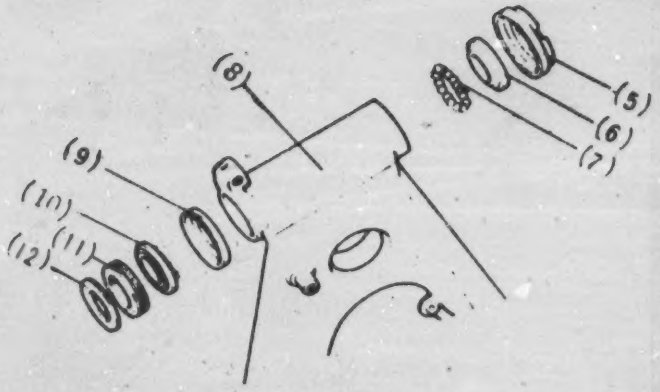


KEY: a. 30°, b. 45°, c. 60°

12D.1 The Micro-Electronics Assembler must be able to work independently on the assembly line.

To accomplish this task, the student must be able to identify the order in which parts are put together and any special instructions required on an assembly drawing.

To demonstrate the ability to perform this task, the student will examine the assembly drawing below and explain to the instructor the order in which the parts are assembled.



Assembly Drawing

15A.3 The Micro-Electronics Assembler must be able to converse with co-workers.

To accomplish this task, the student must be able to read and use in an oral sentence words from a list of words common to the vocabulary of a given occupation.

To demonstrate the ability to perform this task, the student will correctly match the following words and their definitions:

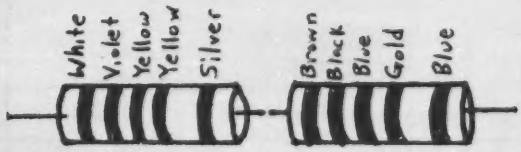
A.	wafer	1.	metal or metallic alloy used when melted to join metallic surfaces.
B.	resistor	2.	semiconducting crystal with two terminals and conducting electricity in only one direction.
C.	specifications	3.	device, as a wire coil, used to produce resistance in a circuit.
D.	tweezers	4.	a self-contained part of a larger unit.
E.	solder chip	5.	optical instrument for enlarging images of minute objects through a series of lensos.
F.	module	6.	make a design on metal or fiberboard by the action of an acid on untreated areas of the material.
G.	nickel disk	7.	compact assembly functioning as a component of a larger unit.
H.	microscope	8.	thin, flat disk used in switches.
I.	capacitor	9.	diagram of the wiring of an electric circuit.
J.	schematic	10.	statement of particulars as to size, composition, etc.
K.	components	11.	thin, circular piece of metal used chiefly in alloys as a catalyst.
L.	diode	12.	small pincer-shaped tool used for plucking, holding or manipulating.
M.	etch	13.	device consisting of two or more conducting plates separated by insulating material and used for storing an electrical charge.

KEY: A-8, B-3, C-10, D-12, E-1, F-7, G-11, H-5, I-13, J-9, K-4, L-2, M-6

16B.3 The Micro-Electronics Assembler must be able to check parts against specifications and inspect work.

To accomplish this task, the student must be able to answer factual questions based on the data supplied on common reference tables and charts.

To demonstrate the ability to perform this task, the student will interpret the color coded resistors below using exhibit 84A.

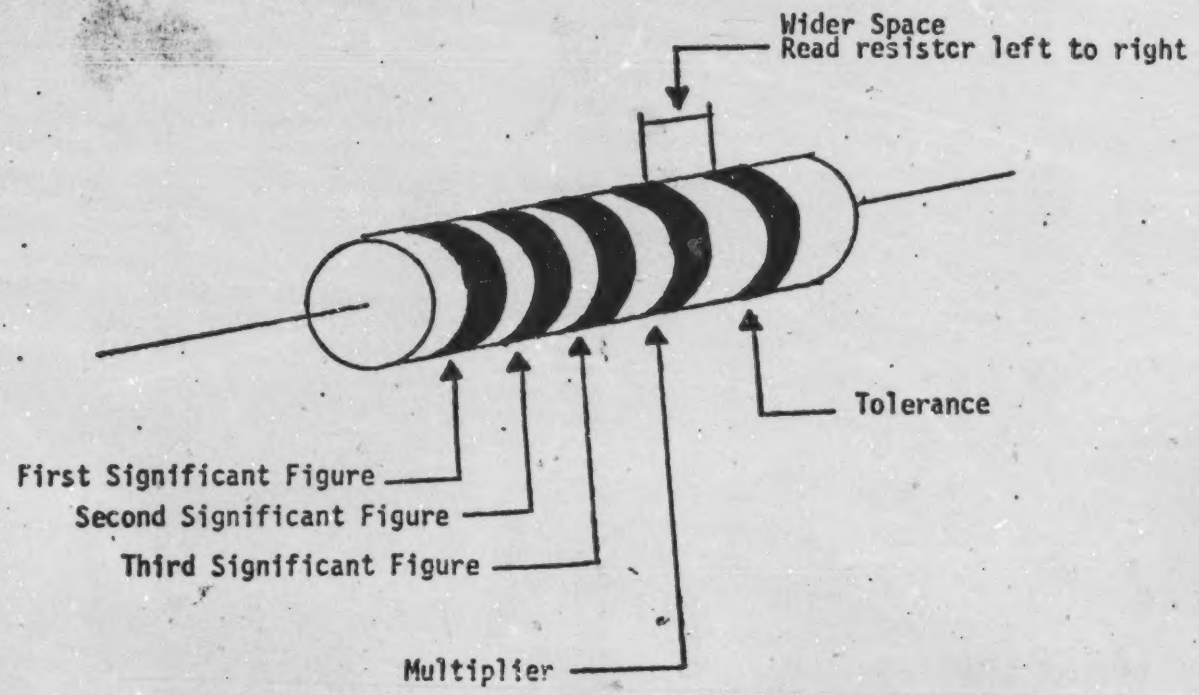


KEY: A. 9,740,000 ± 10% B. 10.6 ± .25%

84A

THE FIVE BANDER

1253



Color	Fig.	Multiplier	± Tolerance %
Black	0	0 Zeros	
Brown	1	1 Zero	± 1%
Red	2	2 Zeros	± 2%
Orange	3	3 Zeros	
Yellow	4	4 Zeros	
Green	5	5 Zeros	± .5%
Blue	6	6 Zeros	± .25%
Violet	7	7 Zeros	± .1%
Gray	8	8 Zeros	± .05%
White	9	9 Zeros	
Silver		10^{-2} .01	± 10%
Gold		10^{-1} .1	± 5%

84B

COMPETENCY BASED JOB DESCRIPTION FACT SHEET

OCCUPATIONAL TITLE: Chassis Assembler (Electronics Assembler)

D.O.T. CODE: 729.884 (4th Ed.: 726.684-018)

ACE Number: 85

CAREER LADDER:

FIRST LEVEL: Production I Chassis Assembler

SECOND LEVEL: Production II

THIRD LEVEL: Production "Lead"

D.O.T.'s General Education Level: 4

JOB SITE WHERE THE JOB CAN BE OBSERVED:

Hewlett Packhard
1501 Page Mill Road
Palo Alto, CA

These materials were developed pursuant to a grant from HEW.OE under PL93-380, Section 309. This does not necessarily imply endorsement of the content.

The activity which is the subject of this report was supported in whole or in part by the U.S. Office of Education, Department of Health, Education, and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the U.S. Office of Education, and no official endorsement by the U.S. Office of Education should be inferred.

Number of Annual Jobs in San Mateo County ___. This number is based upon the San Francisco-Oakland SMSA, U.S. Census Manpower projections and the quarterly employment security application record system reports on local San Mateo County Employment Development job opening activity.

Job Prerequisites: Application form, interview (no testing), good manual dexterity.

JOB DESCRIPTION (DOT): Assembles chassis of electronic equipment, such as radio and television receivers, electric organs, and record players, using hand tools and power tools and following wiring diagrams or sample assemblies: Bolts and rivets parts, such as coils, transformers, tuning units, printed-circuit subassemblies, tube sockets, and switches to chassis, using hand tools, rivet gun, and pneumatic wrench. Inserts ends of precut wires into chassis terminals, trims ends with cutters, and solders ends to terminals to connect components. Fastens wires to terminals of printed-circuit boards installed on chassis, using wire-wrapping-and-welding device or soldering iron. Inserts tubes in sockets. May assemble cables, following wiring diagram and color code. May be designated according to type of chassis assembled as ELECTRONIC ASSEMBLER, RADIO AND TELEVISION. May be designated according to type of components installed on chassis as COIL MOUNTER, INSTRUMENT-INSTALLATION ASSEMBLER, SOCKET ASSEMBLER, TRANSFORMER MOUNTER, TUBE-COVER MOUNTER, TUBE MOUNTERI, VOLUME-CONTROL MOUNTER.

THE ACADEMIC REQUIREMENTS FOR THE JOB OF CHASSIS ASSEMBLER

Below are listed first in general terms and then in specific competencies the math and communication activities which a person must typically be able to carry out to function successfully as a chassis assembler.

The right hand column lists the exact competencies found to have been essential to the job in our on-site employee interview. This column also notes the skills which are prerequisite to those competencies.

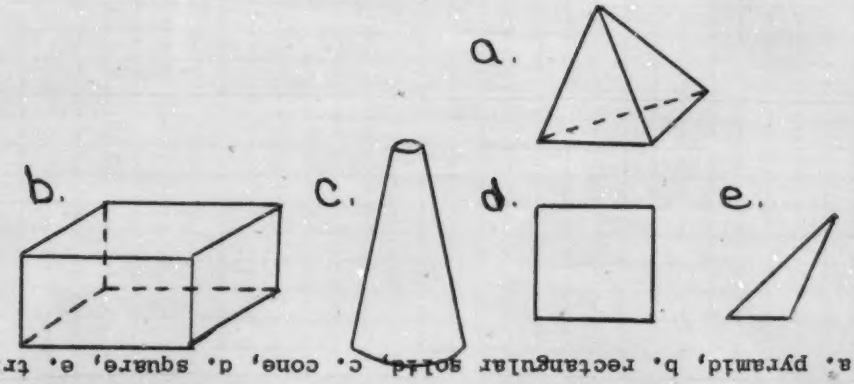
The middle column * states the skill in more general language. The controlled language of this column permits comparison of skills between occupations.

*The items in the middle column have been abstracted from an abbreviated version of the taxonomy of generic skills developed by Kawula, W., and Smith, A. De W., Generic Skills Handbook of Occupation Information, Training Research and Development Station, Prince Albert, Saskatchewan, 1975.

11A.1 The Chassis Assembler must be able to assemble various types of instruments.

To accomplish this task, the student must be able to identify rectangles, squares, triangles, circles, rectangular solids, cubes, pyramids, cones, cylanders and spheres from a set of objects, pictures of objects, or names of objects.

To demonstrate the ability to perform this task, the student will examine the drawings below and, for each one, name the shape and a common object which has that shape.

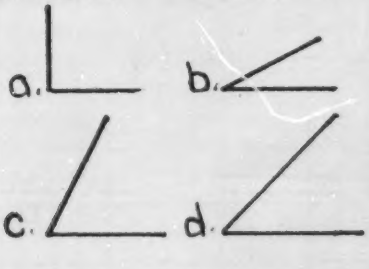


KEY: a. pyramid, b. rectangular solid, c. cone, d. square, e. triangle

11B.1 The Chassis Assembler must be able to assemble units from drawing.

To accomplish this task, the student must be able to identify 30°, 45°, 60°, and 90° angles from a set of such angles, without the aid of a protractor.

To demonstrate the ability to perform this task, the student will identify each of the angles shown below:

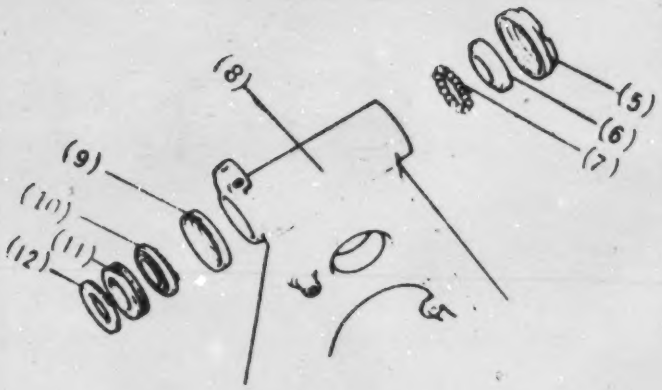


KEY: a. 90°, b. 30°, c. 60°, d. 45°

12D.1 The CHASSIS ASSEMBLER must be able to assemble chassis.

To accomplish this task, the student must be able to identify the order in which parts are put together in an assembly drawing.

To demonstrate the ability to perform this task, the student will examine the assembly drawing below and explain to the instructor the order in which the parts are assembled.



Assembly Drawing

15A.3 The Chassis Assembler must be able to converse with fellow workers and supervisors.

To accomplish this task, the student must be able to read and use in oral sentences words from a list of words common to the vocabulary of a given occupation.

To demonstrate the ability to perform this task, the student will correctly match the following words and their definitions:

A. chassis	1. a self-contained element of a larger unit.
B. coil	2. framework to which parts are attached.
C. printed circuit	3. device with electrical connections for attaching vacuum tubes to chassis.
D. component	
E. potentrometer	4. device for transferring electric energy from one alternating-current circuit to another, usually with a change in voltage, current, etc.
F. diode	
G. tube socket	
H. torque gun	5. small, solid state electronic device used instead of an electron tube.
I. transistor	
J. cables	6. bundle of insulated wires through which electric current is passed.
K. terminal	
L. transformer	7. metal alloy used when melted to join or patch metal parts or surfaces.
M. solder	
	8. connector to which several wires or components may be attached.
	9. spiral of wire used as an inductor.
	10. pneumatic device for tighting bolts to a specified pounds per square inch.
	11. electrical circuit formed by applying conductive material in fine lines or other shapes to an insulating surface.
	12. instrument for measuring, comparing or controlling voltage.
	13. electron tube having two terminals and conducting electricity in only one direction.

KEY: A-2, B-9, C-11, D-1, E-12, F-13, G-3, H-10, I-5, J-6, K-8, L-4, M-7.

16B.3 The Chassis Assembler must be able to requisition parts at the beginning of each shift.

To accomplish this task, the student must be able to answer factual questions based on the data provided on common reference tables and charts...

To demonstrate the ability to perform this task, the student will examine 85A and determine:

1. the number for black wire;
2. the number for white, orange and green wire;
3. the colors on wire #902.

KEY: 1. 0, 2. 935, 3. White, Black, and Red Wire

GAUGE 85-A WIRE REQUEST DATE 10/3/75

Color	Length
0 BLK	12 1/2
1 BRN	
2 RED	2 1/4, 12 1/2
3 ORN	
4 YEL	
5 GRN	
6 BLU	
7 VIO	
8 GRA	
9 WHT	
9 0 WHT/BLK	
9 1 WHT/BRN	
9 2 WHT/RED	
9 3 WHT/ORN	
9 4 WHT/YEL	
9 5 WHT/GRN	
9 6 WHT/BLU	
9 7 WHT/VIO	2 1/4
9 8 WHT/GRA	
9 0 1 WHT/BLK/BRN	
9 0 2 WHT/BLK/RED	
9 0 3 WHT/BLK/ORN	
9 0 4 WHT/BLK/YEL	
9 0 5 WHT/BLK/GRN	
9 0 6 WHT/BLK/BLU	
9 0 7 WHT/BLK/VIO	
9 0 8 WHT/BLK/GRA	

Color	Length
9 1 2 WHT/BRN/RED	
9 1 3 WHT/BRN/ORN	
9 1 4 WHT/BRN/YEL	
9 1 5 WHT/BRN/GRN	
9 1 6 WHT/BRN/BLU	
9 1 7 WHT/BRN/VIO	
9 1 8 WHT/BRN/GRA	
9 2 3 WHT/RED/ORN	
9 2 4 WHT/RED/YEL	
9 2 5 WHT/RED/GRN	
9 2 6 WHT/RED/BLU	
9 2 7 WHT/RED/VIO	
9 2 8 WHT/RED/GRA	
9 3 4 WHT/ORN/YEL	
9 3 5 WHT/ORN/GRN	
9 3 6 WHT/ORN/BLU	
9 3 7 WHT/ORN/VIO	
9 3 8 WHT/ORN/GRA	
9 4 5 WHT/YEL/GRN	
9 4 6 WHT/YEL/BLU	
9 4 7 WHT/YEL/VIO	
9 4 8 WHT/YEL/GRA	
9 5 6 WHT/GRN/BLU	
9 5 7 WHT/GRN/VIO	
9 5 8 WHT/GRN/GRA	
9 6 7 WHT/BLU/VIO	
9 6 8 WHT/BLU/GRA	
9 7 8 WHT/VIO/GRA	

85B

FACT SHEET

COMPETENCY BASED JOB DESCRIPTION FACT SHEET

OCCUPATIONAL TITLE: Machinist Apprentice

D O T CODE: 600.280 (4th Ed.: 600.280-026)

A.C.E. Number: 87

CAREER LADDER:

FIRST LEVEL: Machinist Apprentice

SECOND LEVEL: Machinist

THIRD LEVEL: Foreman

FOURTH LEVEL: Supervisor

D O T 's General Educational Development Level: 4

SITE WHERE THE JOB CAN BE OBSERVED:

Hunt-Spiller
180 Sylvester Rd.
South San Francisco

These materials were developed pursuant to a grant from HEW,OE under PL93-380, Section 309. This does not necessarily imply endorsement of the content.

The activity which is the subject of this report was supported in whole or in part by the U.S. Office of Education, Department of Health, Education, and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the U.S. Office of Education, and no official endorsement by the U.S. Office of Education should be inferred.

Number of Annual Jobs in San Mateo County 184 . This number is based upon the San Francisco-Oakland SMSA, U.S. Census Manpower projections and the quarterly employment security application record system reports on local San Mateo County Employment Development Department job opening activity.

Job Prerequisites: Experience or vocational school training.

JOB DESCRIPTION (DOT): Sets up and operates machine tools, and fits and assembles parts to make or repair metal parts, mechanisms, tools, or machines, applying knowledge of mechanics, shop mathematics, metal properties, and layout machining procedure: Studies specifications such as blueprint, sketch, or description of part to be replaced, and plans sequence of operations. Measures, marks, and scribes dimensions and reference points to lay out stock for machining (LAY-OUT MAN). Sets up and operates lathe, milling machine, shaper, or grinder to machine parts to specifications and verifies conformance of part to specifications using measuring instruments (TOOL-MACHINE SET-UP OPERATOR). Positions and secures parts on surface plate or work table with such devices as vises, V-blocks, and angle plates, and uses handtools such as files, scrapers, and wrenches, to fit and assemble parts to assemblies or mechanisms. Verifies dimensions and alignment with measuring instruments, such as micrometers, height gages and gage blocks. May operate mechanism or machine, observe operation, or test it with inspection equipment to diagnose malfunction of machine or to test repaired machine. May develop specifications from general description and draw or sketch product to be made. May be required to have experience with particular products, machines, or function as construction or repair, and be designated accordingly. Differs from TOOL MAKER primarily in wider range of products made.

ACADEMIC REQUIREMENTS FOR THE JOB OF MACHINIST APPRENTICE

Below are listed first in general terms and then in specific competencies the math and communication activities which a person must typically be able to carry out to function successfully as a machinist apprentice.

The right hand column lists the exact competencies found to have been essential to the job in our on-site employee interview. This column also notes the skills which are prerequisite to those competencies.

The left hand column * states the skill in more general language. The controlled language of this column permits comparison of skills between occupations.

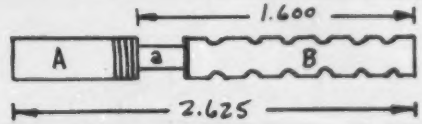
*The items in the left hand column have been abstracted from an abbreviated version of the taxonomy of generic skills developed by Kawula, W., and Smith, A. Dew., Generic Handbook of Occupational Information, Training Research and Development Station, Prince Albert, Saskatchewan, 1975

INSTRUCTIONAL OBJECTIVES		JOB COMPETENCIES
1A.1	Given a series of numbers in numeral form (e.g. 10, 20, 30), be able to copy series in handwritten form with 100% accuracy.	A machinist apprentice must be able to order replacement parts. To accomplish this task, the student must be able to read whole numbers on parts lists and copy them down. To demonstrate the ability to perform this task, the student will copy the following numbers with 100% accuracy: 174631, 259987, 334551, 247965.
1A.5	Count a set of up to 100 objects and state or write the number of objects counted.	A machinist apprentice must be able to keep track of large numbers of parts. To accomplish this task, the student must be able to count objects and write the total. To demonstrate the ability to perform this task, the student will count the number of paper clips which the instructor places in a jar.
1B.2	Find the sum of a set of whole numbers of 1-5 digits including cases where carrying is required.	See 3B.1
1B.4	Find the difference of two 1-5 digit numbers including cases where borrowing is required.	See 3B.2
1C.2	Find the product of a given pair of whole numbers of which one number is up to 5 digits and the other number is up to 3 digits.	See 3C.1
1C.4	Find quotients of 1-5 digit dividends and 1-3 divisors including cases where there are remainders.	See 3C.4
1D.1	Use addition, subtraction, multiplication or division, as appropriate, in the solution of problems involving a combination of two or more functions with whole numbers.	A machinist apprentice must be able to cut threads. To accomplish this task, the student must be able to combine functions of addition and subtraction with those of multiplication. To demonstrate the ability to perform this task, the student will compute the following problems:

INSTRUCTIONAL OBJECTIVES		JOB COMPETENCIES
		$\frac{100-4}{16} = 6$, $\frac{33700+4(23)}{8} + 16 = 4240$.
1E.1	Round off a number to nearest ten, hundred, thousand, ten thousand, or hundred thousand.	See 3D.1
2A.2	Reduce a fraction to its simplest form (lowest terms).	See 2A.5
2A.4	Write equivalent fractions for a given fraction given a new numerator and denominator.	See 2A.5
2A.5	Arrange a set of fractions and/or mixed numbers in ascending or descending order.	A machinist apprentice must be able to check tolerances of machined parts. To accomplish this task, the student must be able to determine whether a given fraction is larger or smaller than another fraction. To demonstrate the ability to perform this task, the student will rank the following fractions in descending order and then read them to the instructor in ascending order: $\frac{1}{3}, \frac{3}{8}, \frac{8}{9}, \frac{9}{16}, \frac{16}{21}, \frac{1}{10}, \frac{1}{14}, \frac{2}{11}$.
2B.1	Calculate the sum in simplest form of two or three common fractions with like denominators.	See 2B.3
2B.2	Calculate the sum in simplest form of two or three common fractions with unlike denominators.	See 2B.3
2B.3	Calculate the sum in simplest form of two or three mixed numbers with like and unlike denominators.	A machinist apprentice must be able to work with blueprints. To accomplish this task, the student must be able to figure out unknown dimensions by

1265

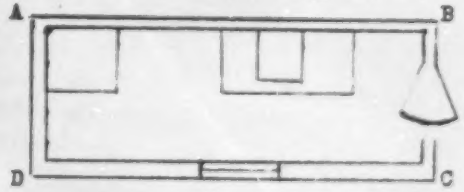
INSTRUCTIONAL OBJECTIVES	JOB COMPETENCIES
	adding fractional dimensions. To demonstrate the ability to perform this task, the student will compute the problems below. a. $\begin{array}{r} \frac{1}{4} \\ +\frac{3}{4} \\ \hline \end{array}$ b. $\begin{array}{r} \frac{1}{3} \\ +\frac{7}{16} \\ \hline \end{array}$ c. $\begin{array}{r} 1\frac{3}{4} \\ +8\frac{1}{4} \\ \hline \end{array}$ d. $\begin{array}{r} 7\frac{9}{16} \\ +4\frac{3}{8} \\ \hline \end{array}$ KEY: a. 1, b. 37/48, c. 10, d. 11 15/16.
2B.5 Calculate the difference in simplest form of two common fractions with like denominators.	See 2B.6
2B.6 Calculate the difference in simplest form of two common fractions with unlike denominators.	A machinist apprentice must be able to work with shop drawings and blueprints. To accomplish this task, the student must be able to calculate dimensions which are not specified on the plans by subtraction of fractions. To demonstrate the ability to perform this task, the student will compute the following problems: a. $\begin{array}{r} \frac{7}{8} \\ -\frac{3}{8} \\ \hline \end{array}$ b. $\begin{array}{r} \frac{9}{16} \\ -\frac{1}{3} \\ \hline \end{array}$ KEY: a. 4/8 or ½, b. 11/48.
3A.1 Read a given 1-4 place decimal fraction and write its name in words.	See 3A.3
3A.2 Write a 1-4 place decimal fraction given the word name of the number.	See 3A.3

INSTRUCTIONAL OBJECTIVES	JOB COMPETENCIES
3A.3 Arrange a set of decimal fractions in ascending or descending order.	A machinist apprentice must be able to work within tolerances while machining parts. To accomplish this task, the student must be able to recognize whether the actual part size is greater or smaller than must be allowed. To demonstrate the ability to perform this task, the student will rearrange the following decimals in descending order and read them aloud to the instructor in ascending order: .62, .75, 1.5, .5, 3., .406, 2, .875.
3B.1 Calfulate the sum of a set of decimal fractions.	A machinist apprentice must be able to find all the dimensions of an object depicted in a shop drawing. To accomplish this task, the student must be able to find dimensions not given by addition of decimal fractions. To demonstrate the ability to perform this task, the student will determine that in 87-A, the overall length points X to Y is 1.75 inches, and from R to S is 2.00 inches.
3B.2 Calculate the difference of two decimal fractions.	A machinist apprentice must be able to produce parts from blueprints. To accomplish this task, the student must be able to determine the length of base material needed to produce the parts by subtracting dimensions given as decimal fractions. To demonstrate the ability to perform this task, the student will examine the drawing below and determine that part A is 1.025 inches long. 
3C.1 Calculate the product of two decimal fractions when rounding off is (a) not required, and (b) required.	A machinist apprentice must be able to figure out how to cut threads into a piece of metal. To accomplish this task, the student must be able to multiply decimal fractions. To demonstrate the ability to perform this task, the student will multiply the numbers below, rounding off to 2 places on the first two problems and leaving the third as is: a. 7.5 x .75 b. 1.5 x .625 c. 1.75 x .5

KEY: a. 5.625, b. .94, c. .875.

INSTRUCTIONAL OBJECTIVES	JOB COMPETENCIES
3C.3 Calculate to a given number of decimal places, the quotient of a <u>whole number</u> divided into: a. a whole number larger than the divisor; b. a whole number smaller than the divisor; c. a decimal fraction.	See 3C.4
3C.4 Calculate to a given number of decimal places, the quotient of a <u>decimal fraction</u> divided into: a. a decimal fraction; b. a whole number.	A machinist apprentice must be able to make various calculations before working on machine parts. To accomplish this task, the student must be able to divide decimal fractions. To demonstrate the ability to perform this task, the student will find the quotients of the following problems to 3 decimal places: a. $15\overline{)37.5}$, b. $12\overline{)1.584}$, c. $3.5\overline{)28.534}$, d. $1.75\overline{)3.0625}$.
3D.1 Round off a decimal fraction to the nearest tenth, hundredth, thousandth, or ten-thousandth.	A machinist apprentice must be able to machine a part to within a given tolerance. To accomplish this task, the student must be able to understand rounding off of decimals. To demonstrate the ability to perform this task, the student will round off the following numbers to 3 decimal places: 1.67432, 37.6454, 1.9375, 84.89552.
5A.1 Convert: a. a common fraction or mixed number to a decimal fraction; b. a decimal fraction to a common fraction or mixed number.	A machinist apprentice must be able to check the sizes of drills, screws, thread cutters, and diameters of machined parts. To accomplish this task, the student must be able to convert fractional measurements to decimals and vice versa. To demonstrate the ability to perform this task, the student will determine in a, the decimal equivalents of the fractions given and in b, the fraction which represents the decimal given: a. 1/2, 5/8, 3/16, 2/5, 1 3/4; b. .375, 1.8, .4, .125, .03125.

KEY: a. 2.500, b. .132, c. 8.152, d. 1.750.

INSTRUCTIONAL OBJECTIVES	JOB COMPETENCIES
5C.1 Identify comparisons of two numbers in forms such as a:b, "a is to b", or "a parts to b parts", as ratios.	See 5C.3
5C.2 State or write in simplest form (lowest terms), a ratio of two numbers or items in the form: a) a:b; b) a/b	See 5C.3
5C.3 Write a ratio given a description of two numbers or items, one of which must be determined by addition or subtraction of the numbers in a given ratio.	To accomplish this task, the student must be able to write a ratio given a description of two numbers or items, one of which must be determined by addition or subtraction of the numbers in a given ratio. To demonstrate the ability to perform this task, the student will determine that if he has two gears, one with 48 teeth and one with 16, and he replaces the smaller gear with one having 4 less teeth, the old ratio was 3:1 and the new one is _____. Answer: 4:1
5D.1 Identify an equality of two numbers in the form of: a:b = c:d, a/b = c/d, "a is to b as c is to d", or "a parts to d parts", etc., as a proportion.	See 5D.3
5D.2 Calculate the unknown number given 3 numbers in a proportion.	See 5D.3
5D.3 Calculate the number when a fraction of it is known, using the proportion method.	A machinist apprentice must be able to work out new dimensions for an object if the overall size is reduced. To accomplish this task, the student must be able to proportionally reduce each dimension of a scale drawing. To demonstrate the ability to perform this task, the student will examine the scale drawing below and determine the new length of AD and the new area of the room if the length of AB is reduced by half. 1":10' 

1269

INSTRUCTIONAL OBJECTIVES

6A.2 Calculate the area of a given square.

6A.3 Calculate the area of a given rectangle.

6A.4 Calculate the area of a given triangle.

6A.5 Calculate the area of a given circle.

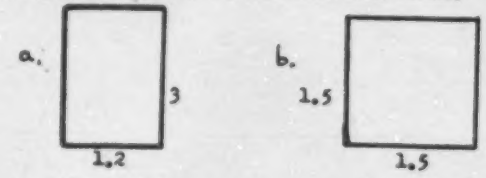
6A.6 Solve a practical problem involving area calculations of a square, rectangle, triangle, and/or circle.

JOB COMPETENCIES

See 6A.3

A machinist apprentice must be able to determine the amount of material needed to make a given object. To accomplish this task, the student must be able to figure the areas of rectangles.

To demonstrate the ability to perform this task, the student will examine the 2 rectangles below and determine their areas.



KEY: a. 3.6, b. 2.25.

See 6A.6

See 6A.6

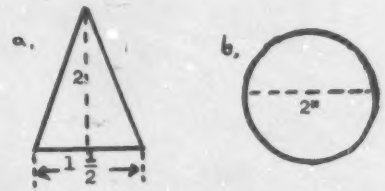
A machinist apprentice must be able to fill orders for variously shaped objects. To accomplish this task, the student must be able to determine the areas of these different objects to obtain the correct amount of

6A.7 Estimate the area of common rectangular or square objects within 25% of the actual area.

6B.2 Calculate the perimeter of a given rectangle or square.

material.

To demonstrate the ability to perform this task, the student will calculate the areas of the following figures:



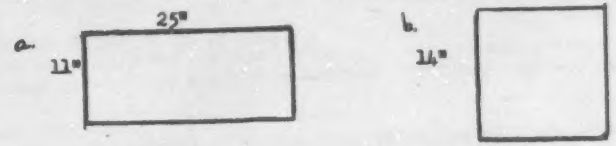
KEY: a. 1½, b. 12.56.

A machinist apprentice must be able to copy a part brought in by a customer. To accomplish this task, the student must be able to estimate the size of an object to approximate the amount of material needed.

To demonstrate the ability to perform this task, the student will estimate the area of several rectangular or square objects in the room to within 25% of the actual area.

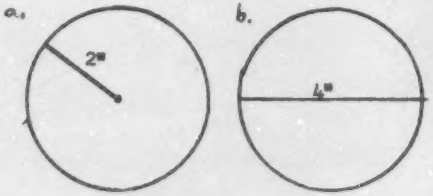
A machinist apprentice must be able to determine the perimeter of various objects.

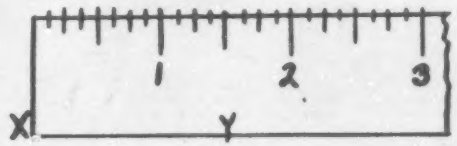
To demonstrate the ability to perform this task, the student will examine the objects below and determine their perimeters:



KEY: a. 72", b. 56".

1271

INSTRUCTIONAL OBJECTIVES	JOB COMPETENCIES
6B.3 Identify π as a constant equal to c/d for all circles and identify its approximate value as 3 1/7 or 3.14.	See 6B.4
6B.4 Calculate the circumference of a circle given: a. its radius; b. its diameter.	A machinist apprentice must be able to work with round objects. To accomplish this task, the student must be able to determine the circumference of an object. To demonstrate the ability to perform this task, the student will determine the circumference of the 2 circles below:  KEY: a. 12.56, b. 12.56.
6G.1 Add and subtract 12-hour clock times including cases where borrowing is required.	A machinist apprentice must be able to fill out a time card accounting for work hours. To accomplish this task, the student must be able to add and subtract 12-hour clock times to get the time worked. To demonstrate the ability to perform this task, the student will compute the problems below: 8:00 A.M. + 8 hours 5:00 P.M. - 9:00 A.M.
8A.2 Round off a number (including mixed numbers) to a given unit of precision.	See 8A.5

INSTRUCTIONAL OBJECTIVES	JOB COMPETENCIES
8A.3 Identify a series of consecutive whole numbers or multiples of whole numbers with or without equal subdivisions between numbers on a measuring device, as a graduated scale.	See 8A.5
8A.4 Write the size of the interval between: a. numerals on a graduated scale; b. subdivisions on a graduated scale.	See 8A.5
8A.5 Write the measurement indicated on a sketch of a graduated scale: a. to the nearest whole number when the scale is marked off in consecutive whole numbers with or without subdivisions. b. to a given precision when the scale is marked off in multiples of a whole number with or without subdivisions. c. to a given precision when the scale is marked off in whole numbers with or without subdivisions representing fractions such as halves, quarters, eights, sixteenths, tenths, or fifths. d. to a given precision when the scale is marked off in whole numbers which represent multiples of a given number such as 100 or 1000.	A machinist apprentice must be able to make extremely accurate measurements. To accomplish this task, the student must be able to use measuring tools such as steel rules. To demonstrate the ability to perform this task, the student will examine the graduated scale below and determine that the distance from X to Y is 1 1/2 inches. 
8A.6 Write the measurement indicated on a sketch of a combination of scales which may be circular and read in either a clockwise or counterclockwise direction, such as on a gas or electric meter.	A machinist apprentice must be able to measure round and cylindrical objects with great accuracy. To accomplish this task, the student must be able to write the measurement indicated on a sketch of a combination of scales which may be circular and read in either a clockwise or counterclockwise direction. To demonstrate the ability to perform this task, the student will read the scales on 87-B with 100% accuracy.

1273

INSTRUCTIONAL OBJECTIVES	JOB COMPETENCIES
9A.1 Identify millimeters, centimeters, decimeters, meters, decameters, hectometers and kilometers as units of metric distance measure.	See 9A.3
9A.3 Estimate the length, width, or height of common objects or the distance between objects, within 20% plus or minus of the actual distance.	A machinist apprentice must be able to manufacture parts given a model. To accomplish this task, the student must be able to estimate the length, width and height of the model in order to prepare the raw materials. To demonstrate the ability to perform this task, the student will estimate the dimensions of several objects chosen by the instructor.
9B.1 Given tables, convert metric distance measurements to English measurements.	See 9B.2
9B.2 Given tables, convert English distance measurements to metric measurements.	A machinist apprentice must be able to work with foreign-made parts. To accomplish this task, the student must be able to convert metric measure to English measures and vice versa. To demonstrate the ability to perform this task, the student will examine the charts below and determine that 19 mm = .7480 inches and that $\frac{1}{8}$ inch = 3.175 mm.

INCHES	MM.
1/64 — .015625	.39688
1/32 — .03125	.79375
3/64 — .046875	1.19063
1/16 — .0625	1.58750
5/64 — .078125	1.98438
3/32 — .09375	2.38125
7/64 — .109375	2.77813
1/8 — .125	3.17500
9/64 — .140625	3.57188
5/32 — .15625	3.97375
11/64 — .171875	4.36563

mm.	in.	15	= .5905	30	= 1.1811
.25	= .0098	15.25	= .6004	30.25	= 1.1909
.50	= .0197	15.50	= .6102	30.50	= 1.2008
.75	= .0295	15.75	= .6201	30.75	= 1.2106
1	= .0394	16	= .6299	31	= 1.2205
1.25	= .0492	16.25	= .6398	31.25	= 1.2303
1.50	= .0591	16.50	= .6496	31.50	= 1.2402
1.75	= .0689	16.75	= .6594	31.75	= 1.2500
2	= .0787	17	= .6693	32	= 1.2598
2.25	= .0886	17.25	= .6791	32.25	= 1.2697
2.50	= .0984	17.50	= .6890	32.50	= 1.2795
2.75	= .1083	17.75	= .6988	32.75	= 1.2894
3	= .1181	18	= .7087	33	= 1.2992
3.25	= .1280	18.25	= .7185	33.25	= 1.3091
3.50	= .1378	18.50	= .7283	33.50	= 1.3189
3.75	= .1476	18.75	= .7382	33.75	= 1.3287
4	= .1575	19	= .7480	34	= 1.3386
4.25	= .1673	19.25	= .7579	34.25	= 1.3484
4.50	= .1772	19.50	= .7677	34.50	= 1.3583
4.75	= .1870	19.75	= .7776	34.75	= 1.3681
5	= .1968	20	= .7874	35	= 1.3779
5.25	= .2067	20.25	= .7972	35.25	= 1.3878
5.50	= .2165	20.50	= .8071	35.50	= 1.3976
5.75	= .2264	20.75	= .8169	35.75	= 1.4075
6	= .2362	21	= .8268	36	= 1.4173
6.25	= .2461	21.25	= .8366	36.25	= 1.4272
6.50	= .2559	21.50	= .8465	36.50	= 1.4370

11A.1 Identify rectangles, squares, triangles, circles, rectangular solids, cubes, pyramids, cones, cylinders and spheres from a set of objects, pictures of objects, or names of objects.

See 11A.3

11A.2 Identify:

a. rectangles, squares, triangles, and circles as plane figures (two-dimensional).
b. rectangular solids, cubes, pyramids, cones, cylinders, and spheres as solid figures (three-dimensional).

See 11A.3

INSTRUCTIONAL OBJECTIVES

11A.3 Identify rectangles, squares, triangles, circles, rectangular solids, cubes and cylinders, given their definitions or characteristics.

11B.1 Identify 30°, 45°, 50°, and 90° angles from a set of such angles without the aid of a protractor.

12A.1 Identify 1:4, 6:1, 1" to the foot, 1" = 5 mi., 1:50,000, etc., as examples of scales used to represent reductions or expansions of the actual size of an object.

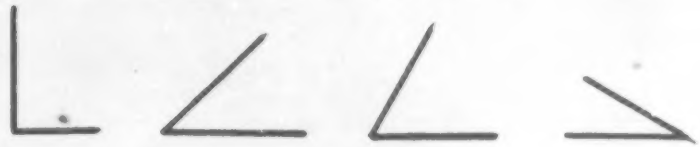
JOB COMPETENCIES

A machinist apprentice must be able to manufacture parts in different shapes. To accomplish this task, the student must be able to identify various shapes such as triangles, squares, etc.

To demonstrate the ability to perform this task, the student will examine the forms below and explain them to the instructor.

A machinist apprentice must be able to bevel objects or cut dies with certain angles. To accomplish this task, the student must be able to identify 30°, 45°, 60°, and 90° angles.

To demonstrate the ability to perform this task, the student will examine the angles below and correctly name them.



See 12A.2

INSTRUCTIONAL OBJECTIVES

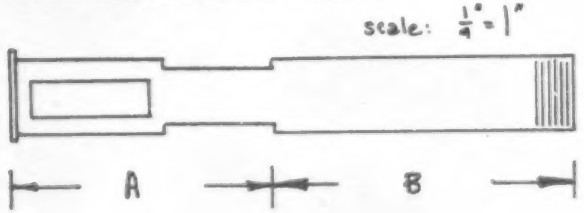
12A.2 Convert a scale measurement to true size given the scale.

12D.1 Identify the order in which parts are put together in an assembly drawing.

JOB COMPETENCIES

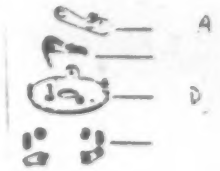
A machinist apprentice must be able to manufacture parts from scale drawings or blueprints. To accomplish this task, the student must be able to convert the given dimensions into the actual dimensions of the parts.

To demonstrate the ability to perform this task, the student will examine the diagram below and draw lines which represent the actual length of parts A and B.



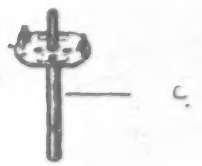
A machinist apprentice must be able to assemble parts according to a diagram.

To demonstrate the ability to perform this task, the student will examine the diagram below and determine the order of the parts marked A, B, C, D and E:



Substitute

assembly drawing



1277

INSTRUCTIONAL OBJECTIVES	JOB COMPETENCIES
13A.1 Given letters of the alphabet in manuscript form and in random order, read each letter and pronounce each letter correctly.	See 13A.2
13A.2 Given the letters of the alphabet in manuscript form and in random order, read each letter correctly in the proper alphabetical order.	A machinist apprentice must be able to find parts in storage bins. To accomplish this task, the student must be able to recognize the letter codes used in order to quickly and accurately find the parts. To demonstrate the ability to perform this task, the student will read the letters below and say them to the instructor in alphabetical order: Z, Q, M, B, F, R, G, A, N.
15A.1 Read a list of 50 words from a series of commonly used terms (e.g., from the Dolch List).	See 15A.3
15A.2 Read words from the labels of frequently used products or of products used in a given occupation.	A machinist apprentice must be able to use a variety of products for the machinery used on the job. To accomplish this task, the student must be able to read accurately the directions for the use of these products. To demonstrate the ability to perform this task, the student will examine the label below and explain the directions to the instructor. <u>GREASE-EASE HAND CLEANSER</u> TO USE: Apply a generous amount to your hands. Rub thoroughly into hands, then wipe hands with a towel. A second application may be needed. <u>DO NOT</u> use water. <u>DO NOT</u> use on face as it may cause eye and nose irritation.

INSTRUCTIONAL OBJECTIVES

15A.3 Read and use in an oral sentence words from a list of words common to the vocabulary of a given occupation.

JOB COMPETENCIES

A machinist apprentice must be able to converse with customers and co-workers about job orders and machinery. To accomplish this task, the student must be able to read and use correctly words common to the occupation of machinist.

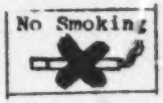
To demonstrate the ability to perform this task, the student will correctly match the following words with their definitions:

A. lathe
B. micrometer
C. specifications
D. scribe
E. tolerance
F. dimension
G. wrench
H. vise
I. journeyman
J. grinder
K. stock
L. blueprint

1. a machine for shaping or smoothing a surface by using friction
2. a photographic reproduction rendered as white lines on a blue background
3. the piece of metal which is the raw material for the finished product
4. a device for measuring thousandths of inches
5. a clamping device
6. a machinist who has completed an apprenticeship and is now considered proficient on the job.
7. a machine which spins a part on a horizontal axis which is shaped by a fixed cutting or grinding tool
8. the size of an object indicated on a shop drawing or blueprint
9. prescribed materials, dimensions and workmanship for a part which needs to be machined or built
10. the allowance for error in a machined part
11. any of several tools with fixed or movable jaws for gripping
12. to cut a groove or line into an object for measurement.

Key: A 7, B 4, C 9, D 12, E 10, F 8, G 11, H 5, I 6, J 1, K 3, L 2.

1279

INSTRUCTIONAL OBJECTIVES	JOB COMPETENCIES
15B.1 Read aloud and explain a series of common functional signs (e.g., safety signs, road signs, etc.).	A machinist apprentice must be able to work safely with lathes, drills, grinders, and caustic chemicals. To accomplish this task, the student must be able to read functional signs pertaining to safety. To demonstrate the ability to perform this task, the student will read the signs below and explain their meanings to the instructor. DANGER High Voltage  Watch for GANTRY Overhead
16A.4 Given a variety of common business forms such as work orders, job orders, issue and receipt vouchers, claims and purchase orders, answer factual questions based on the data on the forms.	A machinist apprentice must be able to read a paycheck To demonstrate the ability to perform this task, the student will read the paycheck below and determine that the gross pay is $190.40, the federal income tax withheld is $25.50, the social security tax is $8.00 and the net pay is $156.90.
16B.3 Given common reference tables and charts such as organization charts, parts charts, reference tables, including charts and tables designed in matrix form (rows and columns), answer factual questions based on the data supplied.	See 16D.4

Name Louis Stacey

From 8/19 To 9/1		Incl.
Regular	190.	40
Overtime		
Total Earnings	190.	40
wh/tax 25. 50		
F.I.C.A. 8. 00		
Total Deductions	33	50
Amount of Check	156.	90

No. 153

September 8, 1967

PAY TO THE ORDER OF Louis Stacey $ 156.90

One hundred fifty-six and 90/100 ---------- DOLLARS

Valley National Bank
LAND, CALIFORNIA

Christian [illegible]

INSTRUCTIONAL OBJECTIVES

16D.2 Identify the particular kind of information or directions included in a given manual, using the title, table of contents and/or index as guide.

16D.4 Given a typical parts manual, be able to locate a particular part and answer factual questions about its description (e.g., price, code number, vendor, etc.).

JOB COMPETENCIES

See 16D.4

A machinist apprentice must be able to determine the part number of an object to order it. To accomplish this task, the student must be able to read parts lists.

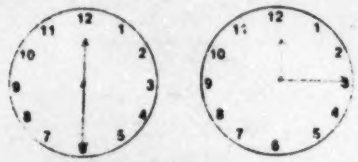
To demonstrate the ability to perform this task, the student will examine the parts list below and determine that a long bonnet plunger spring would be part # GB-336-11 and that a coil 230 V, 50 cycles short bonnet would be part # GB-1332-3FF and would cost $16.80.

Substitute parts list with

number, name and list price.

1281

INSTRUCTIONAL OBJECTIVES	JOB COMPETENCIES
17A.4 Identify statements as being true or false after reading a given selection.	A machinist apprentice must be able to work with materials or tools that are unfamiliar. To accomplish this task, the student must be able to read a selection and determine the facts contained therein. To demonstrate the ability to perform this task, the student will read the following passage and determine whether the following are true or false: a. Oxygen and compressed air are the same thing; b. Oxygen is dangerous because of the fire hazard; c. Oxygen is used for pneumatic tools and ventilation.
	Substitute section from job manual or textbook on care of oxygen cylinders
19A.4 Identify the main idea from a given speech which has just one main idea.	See 19A. 15
19A.10 Answer "who", "what", "where", "when" and literal "why" questions based on spoken information.	See 19A.15

INSTRUCTIONAL OBJECTIVES	JOB COMPETENCIES
19A.15 Perform a series of two or three activities which require recall of oral instructions. (The activities to be within the abilities of the student - recall is the item to be demonstrated.)	A machinist apprentice must be able to perform tasks based on instructions given by a supervisor. To accomplish this task, the student must be able to recall important details of a conversation and perform tasks based on those instructions. To demonstrate the ability to perform this task, the student will listen to the following and then perform the tasks mentioned; a. count out nine paper clips; b. form two groups of 4 paper clips apiece and link them together; c. link the remaining clip to one of the groups; d. link the two remaining groups together.
21A.4 Given a standard clock, tell correct time to within 5 minutes of actual time.	A machinist apprentice must be able to get to work on time and keep track of hours worked. To accomplish this task, the student must be able to tell actual time. To demonstrate the ability to perform this task, the student will examine the clocks below and correctly give the time indicated.  A. 12:30 B. 12:15
22A.1 Given simple data in the form of words and figures, write phrases on forms which are legible and which convey the desired information.	See 22B.2

INSTRUCTIONAL OBJECTIVES	JOB COMPETENCIES
22B.2 Complete a sample application form for employment in a legible manner.	A machinist apprentice must be able to apply for a job. To accomplish this task, the student must be able to fill out a job application. To demonstrate the ability to perform this task, the student will legibly and accurately fill out 87-C.
22B.7 Complete provincial and federal government forms which are in current use for income tax, medical and hospital services, census, etc.	A machinist apprentice must pay income taxes. To accomplish this task, the student must be able to fill out a withholding tax form. To demonstrate the ability to perform this task, the student will fill out the W-4 form below, assuming the student is married and is claiming two exemptions.

Form **W-4**
(Rev. Sept. 1974)
Department of the Treasury
Internal Revenue Service

Employee's Withholding Allowance Certificate

(This certificate is for income tax withholding purposes only; it will remain in effect until you change it.)

Type or print your full name

Your social security number

Home address (Number and street or rural route)

Marital status
☐ Single ☐ Married
(If married but legally separated, or spouse is a nonresident alien, check the single block.)

City or town, State and ZIP code

1 Total number of allowances you are claiming . . . . . .

2 Additional amount, if any, you want deducted from each pay (if your employer agrees) . . . . . $

I certify that to the best of my knowledge and belief, the number of withholding allowances claimed on this certificate does not exceed the number to which I am entitled.

Signature ▶ Date ▶ ....., 19....

26B.1 Given objects, sort by given classification criteria. The sorting should require a minimum of judgment. To over simplify, sorting apples by types or tools by various generic classifications would be appropriate, but sorting apples by quality or lumber by grades is a rating skill.	A machinist apprentice must be able to use the proper tools for a job. To accomplish this task, the student must be able to sort tools by given criteria such as functions or sizes. To demonstrate the ability to perform this task, the student will sort 20 pencils into those over 4" and those under 4".

87-A

1285

Substitute drafting drawing of machine part

with dimensions.

87-B

Substitute micrometer with readings

1286

87-C

EMPLOYMENT APPLICATION

1. NAME (Last) (First) (Middle)

2. ADDRESS (Number, Street, City, Zip Code)

3. TELEPHONES
Home
Business

Length of Time at Current Address

Time at Previous Address

QUESTIONS 4 THROUGH 10 MUST BE ANSWERED *YES* OR *NO*

	YES	NO
4. Do you have a valid California Drivers License?		
5. Do you claim Veteran's Preference? If *Yes*, complete the following and submit copy of DD214 with application. (Veteran's Preference is applicable to entry level positions, only.) SERVICE DATES From _____ To _____ **NOTE:** To receive credit you must have served at least 30 days in the United States Armed Forces in time of war, or national emergency declared by the President of the United States of America, and have been discharged or released under conditions other than dishonorable.		
6. May we contact your present employer as to your qualifications, character and ability?		
7. Have you ever been dismissed from employment or resigned to avoid dismissal for misconduct or unsatisfactory service? (If *Yes*, give details in Question 11)		
8. Have you ever received Workman's Compensation? (If *Yes*, describe in Question 11)		
9. Have you any disease, nervous disorder, physical disability or infirmity? (If *Yes*, describe in Question 11)		
10. Have you been hospitalized for any reason in the past five years? (If *Yes*, describe in Question 11)		

11 Explanations to questions 7 through 10 (Use additional sheets of paper, if necessary.)

12 **EDUCATIONAL RECORD**

Circle Highest Grade Completed
6 7 8 9 10 11 12

Name and Location of Last Elementary or High School

Graduated? Yes ☐ No ☐

Name and Location of College or University

Major

Credits or Degree

List any related business, trade, special training (give location and dates); estimated typing and shorthand speeds; San Mateo County typing and/or shorthand certificates (give certificate number and date); location of college placement file; and other related information as applicable.

13. **EMPLOYMENT INFORMATION** (Begin with your present employment and work back. Account for all time during the past ten years, including periods of unemployment. In addition, please describe any other related work experience, including volunteer work. Use additional sheets if more space is required.)

Present or Last Position

Employer

Address

Supervisor's Name & Title Phone

Your Title

Duties

From mo. year

To mo. year

Total years months

Full Time ☐ Part Time ☐

Last Salary

Reason for leaving

Employer

Address

Supervisor's Name & Title Phone

Your Title

Duties

From mo. year

To mo. year

Total years months

Full Time ☐ Part Time ☐

Last Salary

14. **PERSONAL REFERENCES - GIVE THREE** (Do not include previous employers or relatives.)

NAME	ADDRESS	PHONE NUMBER